

**Report of the
Commissioners
of the
District of
Columbia**

1896~1897

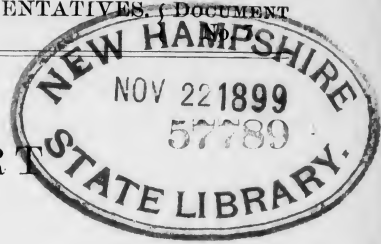
Vol. 2

(Washington, DC)



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55TH CONGRESS, } HOUSE OF REPRESENTATIVES. DOCUMENT
2d Session. }



REPORT

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COMMISSIONERS OF THE DISTRICT OF COLUMBIA

FOR THE

YEAR ENDED JUNE 30. 1897.

*District of Columbia Commissioners
T: Report*

VOL. II.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1897.



WASH.

REF.

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REPORT
OF THE
OPERATIONS OF THE ENGINEER DEPARTMENT
OF THE
DISTRICT OF COLUMBIA

FOR

THE YEAR ENDING JUNE 30, 1897,

UNDER THE DIRECTION OF

MAJOR CHARLES F. POWELL, CORPS OF ENGINEERS, U. S. A.,
ENGINEER COMMISSIONER, DISTRICT OF COLUMBIA,

From July 1, 1896, to March 1, 1897,

AND

CAPTAIN W. M. BLACK, CORPS OF ENGINEERS, U. S. A.,
ENGINEER COMMISSIONER, DISTRICT OF COLUMBIA,

From March 2, 1897.

1877
1878

EXTRACT FROM THE REPORT OF THE COMMISSIONERS OF THE DISTRICT
OF COLUMBIA FOR THE YEAR ENDED JUNE 30, 1897.

OFFICE OF THE COMMISSIONERS
OF THE DISTRICT OF COLUMBIA,
Washington, December 2, 1897.

The PRESIDENT:

The Commissioners of the District of Columbia herewith submit for the information of Congress, as required by law, their annual report of the official doings of the government of said District for the fiscal year which ended June 30, 1897.

* * * * *

OPERATIONS OF THE ENGINEER DEPARTMENT.

From the first of the fiscal year to and including March 1, 1897, the operations of the Engineer Department of the District government were under the direction of Maj. Charles F. Powell, Corps of Engineers, U. S. A. From and including March 2, 1897, the operations of this department were under the supervision of the present Engineer Commissioner, Capt. W. M. Black, Corps of Engineers, U. S. A., who succeeded Major Powell on that date.

* * * * *

STREET AND ALLEY PAVEMENTS.

During the year about 55,152 square yards of new concrete pavement were laid, nearly all within the city. Of this, 45,880 square yards were of sheet asphalt and 9,272 of block asphalt, aggregating respectively 2.33 and 0.44 miles. In the renewal of worn-out pavements 5,238 square yards (0.27 miles) were removed and replaced with asphalt, 39,336 square yards of coal-tar pavements were resurfaced with asphalt or, replaced entirely by it, and 5,050.33 square yards of asphalt block were resurfaced with asphalt. The details of the work can be found in the appended reports of Captain Beach and of Mr. Hunt. (See Vol. II, pp. 3 and 16.) No changes in methods or materials were made during the year excepting in the method of removing small portions of worn asphalt surface for repairs. After extended tests the use of the burner was directed where applicable, as being in the interests of economy and efficiency. New pavements to be constructed will be of sheet asphalt, block asphalt or brick. The granite-block pavement has proved unsatisfactory for this city, for reasons given in Captain Beach's report. Further tests are being made of brick pavement on a concrete base, in the hope that the recent improvements made in the quality of the bricks manufactured for street work will show a greater toughness in the material, which will prevent the splintering under traffic which has caused the dissatisfaction in the past. In the absence of any conclusive laboratory test for paving brick, it is deemed best to make the test of actual use, and thus to determine what makes of brick can be

depended upon. Some of the makes of brick now in place in the city give good promise of durability under the ordinary conditions of traffic. In the later work in alleys an elastic asphalt joint on the sides has been used to provide for the expansion of the brick pavements, which has caused trouble elsewhere. Details of pavement construction are given in Captain Beach's report. (See Vol. II, p. 3.)

The question of the repair of paved streets along the tracks of street railway companies is becoming quite a serious one. The existing law under which the railway companies are required to keep the pavements between the rails and tracks and 2 feet exterior thereto in repair, seems to provide inadequate means for its enforcement. In a number of instances dangerous holes which have developed have had to be repaired by the contractor for street pavements, for which work certificates of indebtedness against the delinquent railway company have been issued to him. This entails great hardship to the contractor, who has found it difficult, and in some instances impossible to obtain payment. Captain Beach suggests a remedy in an amended law (see Vol. II, p. 7), which would seem to provide adequately for the maintenance of these pavements at the expense of the companies, without undue hardship to them. The adoption of an act of this character is earnestly recommended. Legislation is also needed to enable the Commissioners to clear the streets of unused street railway tracks.

The paving of the alleys during the past year has been with brick or asphalt block, and the work done has been generally satisfactory. The need of suitable alley provisions is becoming more and more felt yearly. Not only is a good alley system needed to provide for the removal of ashes and garbage without passing through the fronts of the houses, but such a system, if in existence, would render unnecessary to a great extent the tearing up of paved streets for water and sewer connections and electrical conduits, and would provide a comparatively safe and inconspicuous location for the overhead wires necessary for the various electrical services. The present law authorizing the opening of new alleys has proved defective in limiting too much the cases under which the law can be applied, and should be amended.

The use of cement sidewalks is becoming more and more general, especially since under the latest contract the price has been brought down to the low figure of 89 cents a square yard, with a five year guaranty. Those laid in recent years are giving very general satisfaction, and the cement sidewalk of the present specifications would seem to be more advantageous for this locality than any other known. In some of the suburbs the old plank sidewalks have become rotten and have had to be removed. No more plank walks are being laid, because of the danger to life and limb sure to be caused sooner or later by the rotting and loosening of the planks. Experiments are being made to devise a cheap form of pathway suitable for the suburban districts, and with good promise of success. For example, an ash and cement pathway was recently constructed at a cost of 30 cents a square yard. Experiments are also being made with cement curb. This, possibly, can be substituted for granite in the residence portions of the city.

SUBURBAN STREETS AND COUNTY ROADS.

Particular attention has been paid to the repair of county roads, although the appropriations have been too small to keep even the more important ones in proper condition. No appropriation for watering the roads has been available. In the past ten years the mileage of

county roads and suburban streets has increased from 150 to 207 miles, the increase in the past five years being 17 miles (see Vol. II, map No. 1, p. 293). Many of the large cities throughout the country have been paying especial attention to this class of thoroughfares, and their suburban roads and paths are objects in which they take a just pride. It does seem, for many cogent reasons, that the county roads should receive most careful attention. Since the advent of the bicycle they have become, as never in the past, a means of healthful recreation for all classes. With good roads and bicycles suburban districts become available for residences for persons of small means doing business in the city; with them the bicycle and tricycle have facilitated business deliveries for small dealers; and furthermore, inasmuch as the perishable supplies of the surrounding country are brought over them into the city, the better the roads the cheaper this produce can be delivered. Although lying out of the city, they form a most important adjunct to city life. The appropriation asked for in the estimates, together with the provisions for watering the roads and suburban streets, it is most earnestly hoped will be given, the provision for watering being necessary not only for the comfort of the residents along the roads and of those using them, but also for the preservation of the roads themselves, and therefore as a measure of economy. One of the most important roads in the District—the Canal road—has been until recently owned by a private corporation, so that the expenditure of public funds upon it was a matter of doubtful legality. This has been dedicated to the District, and it is hoped that it can now be kept in better shape.

BRIDGES.

The appropriation for the ordinary care of bridges and construction and repair of bridges has been for some years too small to permit any but the most necessary repairs to be made, and these in the most economical manner possible. As shown in Captain Beach's report (see Vol. II, p. 10), a limit now has been reached which can not be passed with safety, as several of the bridges are now in a dangerous condition. Under the act of Congress approved May 28, 1896, the Capital Railway Company was authorized to run its lines, operated by electricity, across the Navy-Yard Bridge. The weight of a motor car varies from 15,000 to 20,000 pounds, and when loaded with people its weight must be considered in computing the strains as 30,000 to 35,000 pounds. The Navy-Yard Bridge was never constructed to bear such strains. In addition to this, the structure is a very unsightly one and inadequate to meet the demands of travel, and should be replaced by a better new structure, for which estimates have been submitted. In the last appropriation act the Commissioners were directed to obtain by competition plans for a bridge across Rock Creek on the line of Connecticut avenue, extended. It is expected that the plans will be ready for submission to Congress, with estimates in detail, before the beginning of the next calendar year. The work of widening P Street Bridge, as provided for in the last appropriation act, is now in progress.

STREET RAILWAYS.

During the past summer two very important means of street-car propulsion have been under experiment in this city. As permitted by its charter, the Capital Railway obtained authority from the Commissioners to install the Brown electric system on its line between the Navy-

Yard Bridge and the navy-yard. The practicability of this system as a means of street-car propulsion has not yet been demonstrated.

The Eckington and Soldiers' Home and Belt Railway companies have experimented with various types of air motors for street-car propulsion. After a long series of experiments they were authorized to equip their lines with cars fitted with air motors of the type, power, and reservoir capacity of that last tested. It is understood, however, that the ownership of the companies has been changed recently, and that it is the intention of the present owners to equip these lines with the underground electric system.

The underground electric system in use on the Metropolitan lines has been operated throughout the year in a manner most satisfactory to the citizens, and, it is understood, financially satisfactory to the company. It is a question for serious consideration whether sound public policy would not dictate that until some other method of street-car propulsion has been proved to be better Congress should stipulate that all the street-railway companies operated within the city limits be equipped with this form of propulsion, as being the most satisfactory known anywhere at this date. The equipment of all the lines in the city on a uniform plan would afford advantages which can be readily seen, in permitting the transfer of cars from route to route, in permitting eventually the abandonment of some miles of track, and in lessening the liability of a line being tied up by accidents similar to the fire which recently destroyed the power house of the Capital Traction Company.

ELECTROLYSIS.

Some difficulty has been experienced during the past year from electrolytic action on underground wires, gas and water pipes, in cases where the suburban street railroads have attempted to use bonded rails for a return circuit, one pole of the dynamo furnishing the power being grounded. This practice has caused serious trouble in other cities, and although the loss due to it here has been less in degree, unless preventive measures are taken the danger will increase in proportion as the underground municipal work is extended to the suburbs. In the late railway charters granted by Congress the Commissioners are given authority to require a method of construction, which, to a certain degree will guard against danger from this source. Congressional action, however, will be required to remedy this evil in some of the existing lines.

Attention is invited to the report on electrolytic action, and also to the letter from the Superintendent of the Naval Observatory, printed October 29, 1897, for the use of the Senate Committee on the District of Columbia.

SEWERS.

For the details of sewer construction attention is invited to the report of Capt. Lansing H. Beach, U. S. A., and the report of Mr. D. E. McComb, superintendent of sewers, herewith (see Vol. II, pp. 11 and 72).

The application of the continuous-contract system to the work of sewer construction in the District in the case of the Tiber Creek and New Jersey avenue intercepting sewer has developed a condition, arising under the act providing a permanent form of government for the District of Columbia, which causes an increase of cost of the work without apparently a corresponding benefit. The law requires contractors to give bond equal in amount to the estimated cost of the work. In

the contract in question the estimated cost of the work is \$289,000, and the appropriation made for work under it was \$50,000. Under the law a bond for \$289,000 is required, which will have to be carried for several years at considerable expense, which the contractor has to provide for in making his bid in addition to the reasonable cost of the work and his profit, the increase amounting in this case to several thousand dollars. Captain Beach recommends that authority be secured, in cases of work done under the continuous-contract system, to accept a bond for the amount of each season's work separately, varying in amount from two-thirds to the whole cost thereof, the amount in each case to be fixed within the limits named at the discretion of the Commissioners.

It is believed that the system of sewers for the service of houses within the city is generally satisfactory, but the disposal of the sewage is unsatisfactory and is a detriment to the health of the city. The sanitary conditions of the city have been vastly improved in recent years by the reclamation of the Potomac Flats. The reclamation of the Anacostia Flats in a similar manner is strongly urged, and will be greatly in the interest of the general healthfulness. But a third cause of unhealthfulness will remain until the plans of sewage disposal, so ably prepared by the commission convened by Congress in 1889, and set forth in their report printed as House Ex. Doc. No. 45, Fifty-first Congress, first session, shall have been completely carried out. At present the sewage is emptied into the Potomac and Anacostia rivers immediately along the water front of the city and is carried back and forth by the tides, a large portion of it being deposited on the banks. In addition to this the James Creek and B Street canals, which extend to within 930 yards of the Capitol and 800 yards of the White House, respectively, remain sinks of pollution. These canals need only to be examined at low water and disturbed slightly to convince the most skeptical of their dangerous condition, especially during the summer season. In this connection attention is invited to the report of the health officer, Vol. III, p. 46.

Congress has already approved the project of the sewer commission mentioned above, and has authorized work thereunder in the construction of the Rock Creek, F street and Easbys Point, and Tiber Creek and New Jersey avenue interceptors. The whole amount appropriated to date for these works is \$577,000. The total estimated cost of the system, including work already done, is \$4,029,635, this estimate being on the project of the commission as changed in accordance with the experience gained by work already done. It must be noted that at the estimated increase in population this system will be ample until the year 1925; that the relief required will not be gained until the whole of the work is completed, and that at the rate appropriations have been made available for this purpose in the past this work, so important to the District, will not be completed until the year 1928. The cost of this work is great, but its value to the District and the nation's capital is far greater. The good that it will do is not only immediate, but lasting. The revenues available will not permit construction as rapidly as good business economy, apart from other considerations, would require; and even should they do so it is questionable whether in equity the payment of the costs by the taxpayers ought not to be extended over a period of years. Under all of these circumstances it is deemed but proper that this construction should be paid for by funds provided by the sale of bonds, the revenues of each year to be taxed for the establishment of a sinking fund sufficient to distribute the cost equitably over a reasonable time. A bond bill looking to this end is being prepared and will be presented to Congress at its coming session, with

request for early action thereon. It is earnestly hoped that this, or some other means which Congress in its wisdom may devise, will be provided for this necessary work. It is estimated that the entire project could be completed in about five years and that the amount which could be used to advantage during the first year would be \$800,000.

PLUMBING.

The work of this department is shown in the appended report of Mr. C. B. Ball, inspector of plumbing (see Vol. II, p. 150). As stated by Captain Beach, the services rendered by this office seem to be appreciated more and more each year by the public, and it is believed that the efficiency of the service rendered has been greatly improved. Modern conditions of living are making the health of the community more and more dependent upon the excellency of the plumbing in the houses, and call for the highest skill on the part of the plumber. The health of the community would seem to demand that the same safeguards be thrown about this class of work as are required for the work of the pharmacist. A bill designed to maintain a high standard of plumbing work will be presented at the coming session of Congress.

TESTS OF MATERIALS.

Details of the work of the officer having charge of this important duty are shown in the report of Mr. A. W. Dow, inspector of asphalt and cements (see Vol. II, p. 157). A testimonial of the value of this work is found in the many requests for reports of the tests made, which come annually from city engineers.

PROPERTY.

The work of the office of the superintendent of property is fully set forth in the report of its superintendent, Mr. L. T. Boiseau (see Vol. II, p. 173). Attention is also invited to the report of Captain Beach relating to this division of his duties (see Vol. II, p. 13). It would seem that it would be to the interest of the District that the requirement of section 5 of the act providing a permanent form of government for the District of Columbia, requiring that contracts be entered into for expenditures of \$1,000 and over, should be so amended as to permit materials, at least, to be purchased by contract or in open market at the discretion of the Commissioners, as economy and advantage may dictate, as is done in the case of works of river and harbor improvement carried on by the General Government.

WATER DEPARTMENT.

As is well known, the water service of the District is divided under two heads. First, the supply works, carried on under the direction of the Chief of Engineers, and, second, the works of distribution, under the District government. The present provision for the water supply from the Great Falls to the distributing reservoir is ample for present needs, while the means of distribution are now inadequate, as shown by the low pressures in certain portions of the city, notably on Capitol Hill. The present needs of the city urgently demand the completion of the Howard University reservoir and of the tunnel conduit leading thereto. With this completed, the loss of head due to friction in the 4

miles of pipe will be removed, and a greatly increased head will be given in residence sections now provided by gravity supply.

For details of the work of the water department, attention is invited to the accompanying report of Capt. Edward Burr, U. S. A., assistant in charge (see Vol. II, p. 181).

The distributing service of the District is of three classes—the low service, supplied by gravity, and the middle and high services, supplied by pumping from the gravity supply. The areas embraced in each of these services is shown on map, Vol. II, p. 195, appended.

From Captain Burr's report it will be seen that, while the supply at the distributing reservoir is sufficient for present needs, the service at the houses is already insufficient and a cause of legitimate complaint on the part of property owners. The completion of the Howard University reservoir and its means of supply will remedy this in part, but as the number of the inhabitants of the District increases the present system of distribution will become more and more inadequate, and large expenditures will be necessitated for increasing the distribution facilities. This, in turn, is shown by the report of the officer in charge, that the water supply of Washington, if continued at the present rate of increase, will necessitate within a few years an additional aqueduct from Great Falls to the distributing reservoir.

A portion of the water now flowing through the pipes is required for legitimate uses, but another and a large portion is absolutely wasted. It would seem, then, to be a matter of the merest business good sense to provide for the utilization to their fullest extent of our present means of supply by stopping this waste before going to increased expense for larger and more mains, especially since, as shown by Captain Burr, the greater the amount of water provided under the present system the greater the proportion of waste. This waste is due to negligence or to mistaken ideas of sanitation. In some instances the plumbing is permitted to remain defective, causing small leaks which aggregate a large amount. For example, a small dribble from one defective tap recently measured was found to amount in twenty-four hours to 394 gallons, which was more than was found to be used in the same house by a family of nine persons. In other cases water-closet fixtures are tampered with so as to cause a continuous flow, or taps are allowed to remain open continuously. As the result of this, the use and waste of water in the city of Washington foots up a consumption of 150 gallons daily per capita, where, as shown by many instances, 50 gallons per day per capita may be considered a sufficient supply, 75 gallons an ample one for ordinary domestic uses, allowing for the sprinkling of lawns, and 100 gallons a very large supply, sufficient to cover all unavoidable waste and all legitimate municipal and domestic uses. It will readily be seen that this cutting down of the supply from 150 to 100 gallons per capita per day is equivalent to an increase of one-third of the capacity of the present system.

It has been claimed that the use of water by the General Government at its various Departments is responsible for a large portion of the enormous per capita consumption in Washington. It would seem that a greater economy of such use might be secured without detriment to departmental needs. But when it is noted that in the middle and high services the ratio between the midnight and midday flow is practically the same as in the low-service area, in which all of the Departments practically are, it will be seen that the District and the citizens are also at fault.

So far as known there is only one practicable method of preventing

this waste, and that is by the use of meters. It is earnestly urged that the gradual introduction of meters be authorized, as recommended in the estimates of the Commissioners. It is proposed to introduce these meters gradually, at the expense of the District, in measure as the revenues of the water department will permit. This will probably be at a rate which would meter the entire District in ten or fifteen years, so that the cost would not all come at once, while by placing the meters where the greatest waste exists the total waste in the city will be cut down much more rapidly. It is further proposed to charge a minimum amount where meters are used of 75 cents per quarter, or \$3 a year, 50 cents less than the present minimum rate. This would allow a minimum use of 100,000 gallons for \$3, the amount used in excess of this to be paid for at the rate of 3 cents per thousand gallons. At this rate there will be no increase of water rates to the householder for all legitimate uses of water and unavoidable waste. Incidentally, the benefits derived from the introduction of meters would result in providing the only practicable method of having each man pay the expense incurred by the District for the amount of water that he uses, instead of, as at present, paying an arbitrary rate, by which the careful man pays for the extravagance or negligence of his neighbor. The District authorities are now endeavoring to put an end to the waste in the public works and buildings under their charge.

The prevention of water waste will have a marked influence on the problem of purifying the Potomac water by filtration, the cost of such filtration and the difficulty of installing the necessary plant being a direct function of the amount of water to be filtered. As the population on the banks of the Potomac increases, the necessity for such filtration will become more and more imminent.

Numerous figures could be given, if space permitted, in support of the statements made above, but such detail is not considered necessary at present.

A synopsis of the work of the water department during the past fiscal year shows that 94,015 feet of water mains were laid; that high-service mains were extended to Takoma Park and other points heretofore without water facilities; and that the middle-service system has also been extended to include certain areas of the low service in which the pressure was insufficient to furnish a fair supply.

The passage of bill No. 10331, introduced in the Fifty-fourth Congress at its second session and passed by the Senate and House of Representatives, but which failed to become a law, is earnestly recommended, in order to permit suburban settlements at a distance from water mains to be supplied without undue hardship to the owners of intervening lands used solely for agricultural purposes.

WELLS.

As the years go by the old shallow wells, much used by the inhabitants of the older sections of the District, become contaminated and have to be closed, generally against the protests of the neighborhood. One hundred and thirty-five public shallow wells were in use at the end of the fiscal year, 11 having been closed during the year. During this time, with the appropriation available, 20 deep wells were driven at various localities throughout the District, sunk to a depth sufficient to prevent contamination from surface drainage. These are giving a supply of pure cool water which is highly appreciated. The work of substituting these deep wells for the shallow ones should be continued.

STREET LIGHTING AND ELECTRICITY.

The street lighting has been rendered more satisfactory during the past fiscal year by the abolition of the so-called moonlight schedule, but it is not yet entirely satisfactory. Limited appropriations have made it impossible to provide sufficient lighting in many of the alleys and suburban portions of the District. Details of the service are found in Captain Burr's report (Vol. II, p. 198) and in the report of the inspector of electric lights, Vol. II, p. 226.

Captain Burr states that the streets of Washington are most difficult to light, owing to the heavy shade, and that the rows of trees at the curb line make the use of high candle power arc lamps, spaced at long intervals, generally unsuitable. Insufficient appropriations and statutory limitations prevent the erection of such lamps on many business and rapid transit streets, where the need for them is greatest. The use of the arc lamps on residence streets should be avoided as far as possible. In these statements the Commissioners concur. They also concur in Captain Burr's recommendation that authority be given to expend a small portion of the annual appropriation for experimental lighting and improved lamps, not restricted as to cost, hours of lighting, and consumption of gas or candle power. A more liberal appropriation for street lighting is also recommended, as also an increase of the office force to provide for the additional work falling upon this department, due to the increase in the population of the District and the necessity for the supervision of electric wires and conduits.

The introduction of electricity into the District since the organization of the District government has brought an entirely new class of work upon this department in the supervision of electrical wires and the enforcement of laws relating thereto. The legislation relating to the extension of electrical systems for telegraph, telephone, lighting, and power purposes is vague in terms, and its interpretation has been a source of great trouble to the Commissioners. A definite law to govern the extension and control of all these electrical systems is urgently needed.

The report of Inspector W. C. Allen on electrolysis, printed October 29, 1897, for the use of the Senate Committee on the District of Columbia, previously referred to, shows only one of the many dangers to public and private works arising from the use of electricity from which protection is required.

BUILDINGS AND BUILDING INSPECTION.

The details of the work of the office of the inspector of buildings will be found in the appended reports of Captain Burr and the building inspector (Vol. II, pp. 200 and 250). The work of this office is of the very highest importance, as upon it depends the enforcement of the regulations for safe building in the District of Columbia. The area to be covered is very large, and the force available under the present law is totally inadequate. The annual estimates submitted by the Commissioners contain an estimate for the increase of this force, and such an increase is here strongly recommended. The small force renders it practically impossible to prepare properly in the office of the inspector of buildings plans for the municipal buildings authorized by Congress. This condition, and also the desirability of having a diversity in municipal architecture, and in general of obtaining the best results, makes the employment of outside architects in preparing plans for the new build-

ings necessary. The Commissioners also desire to invite attention to the ill effects of making a fixed and definite appropriation for each engine house or schoolhouse of a given size. The prices of land for the sites vary greatly according to their location. Under the system above alluded to, the greater the cost of the site the less the amount available for the construction of the building; hence, necessarily, the plainest buildings have been erected on the most conspicuous sites. In addition to this, contract prices vary slightly from time to time and according to locality. For all of these reasons the Commissioners would recommend that in making appropriations for a definite number of schoolhouses and engine houses the amount be appropriated in lump sums for each class, based upon the amounts named in the estimates for each house authorized, similar to the method now followed in making appropriations for improvements and repairs of streets.

SURVEYOR.

Details of the work of this office are found in the appended report of Mr. William Forsyth (Vol. II, p. 260). Since the close of the fiscal year Mr. Forsyth, after nearly fifty years of service, severed his connection with the work on account of advanced age. It seems but fitting for the Commissioners to record here their appreciation of his long and faithful services to the District of Columbia.

PARKING COMMISSION.

The work of the parking commission is shown in the report of the superintendent of parking, appended hereto (Vol. II, p. 262). The shade trees of the city form one of the great beauties of Washington, and in addition add greatly to the comfort of citizens. The appropriations for the past few years have been inadequate for the work required, and an increase is asked for and recommended. The severe storms which occurred early in the fiscal year damaged the trees greatly and placed a very heavy burden on the limited appropriation available. The damage has not yet been repaired, and is another reason for an increased appropriation.

At the close of the fiscal year the parking commission lost by death one of its oldest members, Mr. John Saul, to whose memory it is due to acknowledge the debt which the city owes to him for his voluntary service of many years.

HIGHWAY-EXTENSION PLANS.

For details of the work of the assistant in charge of highway-extension plans, attention is invited to the report of Mr. W. P. Richards, appended (Vol. II, p. 263). In addition to the work of preparing plans, a portion of the office force was kept almost constantly employed in the location of street lines and the accurate determination of points in the various subdivisions. The constitutionality of the highway act having been affirmed by the decision of the Supreme Court, the plans of the second section, which had been completed and signed in January, were forwarded to the highway commission for revision, and at the present writing are in the hands of the Commissioners, having been referred back for report on various protests. The plans of the third section, embracing the territory west of Rock Creek, are now ready for transmission to the highway commission. The plans of the fourth section have been par-

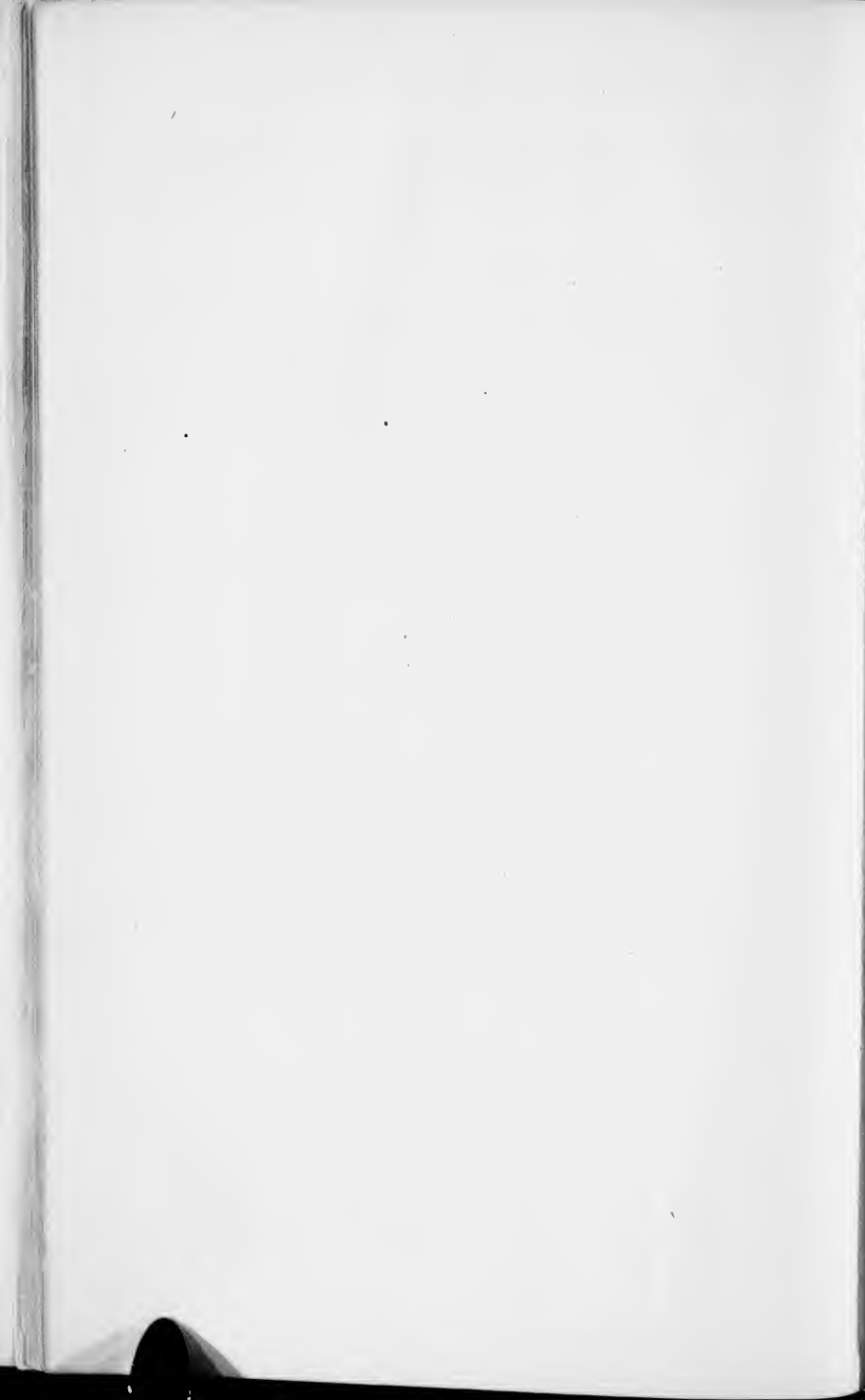
tially prepared. The cases arising in the recorded subdivisions under the first section are now in the courts. The experience of the past year has shown the desirability of certain amendments of the act of March 2, 1893, and the recommendations for legislation thereon will be forwarded early in the next session of Congress.

In conclusion, it is deemed only fitting to acknowledge the good work of the military and civil assistants and of the clerical force of the various departments of the office, who have not spared themselves in carrying out their duties to the best of their ability.

Very respectfully,

JOHN W. ROSS,
JOHN B. WIGHT,
W. M. BLACK,

Commissioners of the District of Columbia.



REPORT OF THE OPERATIONS OF THE ENGINEER DEPARTMENT.

SECOND DIVISION.

Capt. L. H. BEACH,

Corps of Engineers, United States Army, Assistant to the Engineer Commissioner.

STREETS, PAVEMENTS, GRADES, AND CONSTRUCTION OF ROADS.	CONWAY B. HUNT,
SIDEWALKS AND ALLEYS.....	<i>Computing Engineer.</i>
MAINTENANCE OF COUNTY ROADS.....	H. N. MOSS,
CONSTRUCTION AND CARE OF BRIDGES.....	<i>Superintendent of Streets.</i>
SEWER CONSTRUCTION AND MAINTENANCE.....	GEORGE N. BEALE,
PLUMBING PLANS AND INSPECTION.....	<i>Superintendent of Roads.</i>
INSPECTION OF ENGINEERING MATERIALS AND CARE OF PROPERTY.	GEORGE H. BAILEY,
TESTING OF ENGINEERING MATERIALS.....	<i>Engineer of Bridges.</i>
PERMITS.....	D. E. MCCOMB,
	<i>Superintendent of Sewers.</i>
	CHARLES B. BALL,
	<i>Inspector of Plumbing.</i>
	L. T. BOISEAU,
	<i>Superintendent of Property.</i>
	A. W. DOW,
	<i>Inspector of Asphalt and Cements.</i>
	H. M. WOODWARD, Permit Clerk.

CAPTAIN: I have to submit the following report for the past fiscal year of the divisions and departments of the District government under my charge:

STREETS.

During the year 2.33 miles of streets, amounting to 45,880 square yards, were newly paved with asphalt; 0.44 mile, or 9,272 square yards, were paved with asphalt block, and 0.27 mile, or 5,238 square yards, of old pavement were removed and relaid with asphalt; 39,336 square yards of original coal-tar pavement were resurfaced with asphalt or replaced entirely with asphalt; 5,050.33 square yards of asphalt block were resurfaced with asphalt. The total number of miles of the different kinds of pavements in the District is shown in Table E, of Mr. Hunt's report, on page 20.

No granite-block pavements were laid, and it is not probable that any more will be. The noisiness of those that are now upon some of the streets is a source of constant complaint from the people accustomed to the quietness of smoother pavements, and their slipperiness upon the steeper grades after they have been down a year or two forms a strong objection to their use. This slipperiness exists mainly during dry weather, the smooth tops of the blocks becoming coated with a thin layer of iron from the horses hoofs, which appears to act as a lubricant almost as effective as graphite, but which largely disappears, however, when the street is thoroughly wet. This slipperiness might not be so important in other cities, but here, where, owing to the moderate grades and mild winter climate, the horses are, as a rule, unprovided with calks, it becomes a serious objection. The office is constantly in receipt of requests to have the existing granite pavements removed or covered with asphalt. This covering of granite-block pavement with asphalt has been tried several times in this city

in the past, but has never proved satisfactory or economical, as there does not appear to be a sufficient bond between the smooth blocks and the new material, with the result that in a short time holes appear, which involve constant repair if the street is to be kept in proper condition.

An example of a granite-block street that has become dangerous from slipperiness is P street, between Rock Creek and Twenty-seventh street. This street forms the north entrance to Georgetown from the main portion of the city, and is subject to a great deal of travel, in spite of the fact that it is used by vehicles only when unavoidable. Residents of the street state that upon an average three horses a day are thrown down within sight of their houses; the average for the entire street must be considerably larger. Its highly dangerous condition seems to call for a special appropriation for repaving, and the importance of the work should be strongly presented to Congress.

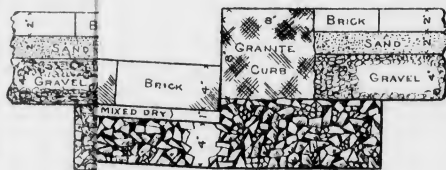
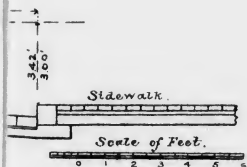
No vitrified brick pavements have been laid upon the streets during the year. There are some localities where it is believed that this material could be used with advantage, although the residents of the city appear to be strongly prejudiced in favor of asphalt.

Graveling and macadamizing were used upon several of the outlying streets for which there were no funds for a permanent improvement. The two terms were formerly used to express different methods of road making, but the experience of the office tends toward a combination of the two, consisting of a layer of broken stone covered with a surfacing of gravel, of which several good deposits are found in different parts of the District.

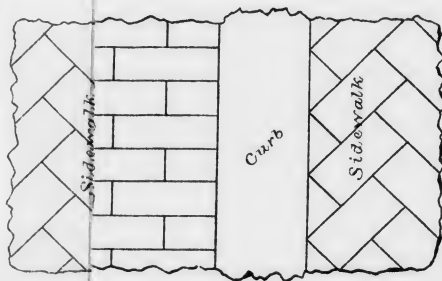
Sheet asphalt and asphalt block continue to be the pavements preferred by the people, and no other kinds were laid during the year. The western portion of the city seems to prefer the sheet asphalt, while the eastern portion expressed itself equally strongly for the other. In laying the sheet-asphalt pavement the practice of making the gutters of vitrified brick has been continued, with very satisfactory results. The reason for this is that as all fluids falling upon a pavement flow to the gutter, it is thus the portion most exposed to their action and the place where decay of the asphalt is most apt to originate, and where it progresses most rapidly. As soon as a gutter becomes uneven it ceases to carry off readily the rain water and other fluids, but allows them to collect in pools, and its disintegration is then more rapid than before. On some of the older streets, where the asphalt was originally laid to the curb, and has decayed and has had to be renewed several times, brick gutters have been put in, with a great advantage both to economy of maintenance and effectiveness of drainage. The first gutters were laid with the brick toothed into the asphalt, but the difficulty of making a repair along the line of junction when so laid has caused later gutters to be laid with a continuous joint. This may expose the joint to greater wear from the wheels of vehicles, but experience has not yet been sufficient to say definitely which is the better method.

The accompanying plate shows the method of laying asphalt pavements ordinarily adopted, and, as the office is in receipt of so many inquiries upon the subject that it is believed to be of general interest, the parts of the specifications relating to the asphalt surface are inserted:

Binder.—The binder course shall be composed of clean broken stone equal in quality to the stone for the base and passing an inch and a quarter screen. Eighty-five per cent of this shall pass in its longest dimensions, and of the remaining 15



GUTTER.



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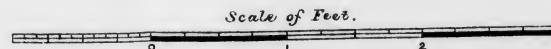
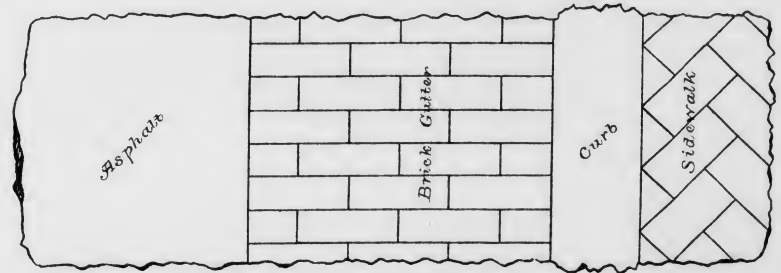
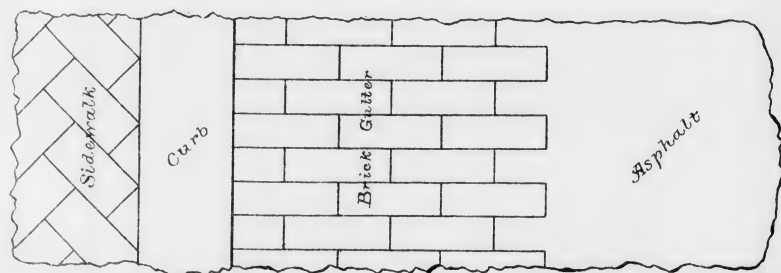
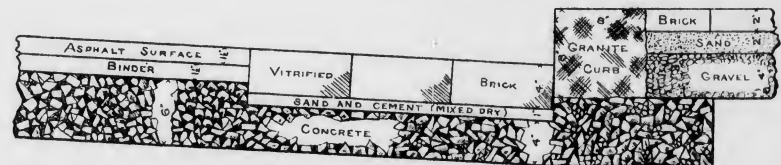
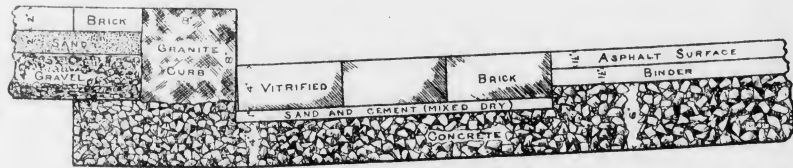
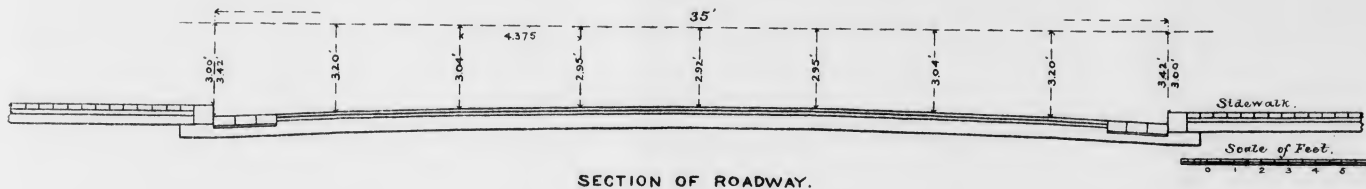
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SHEET ASPHALT PAVEMENT.

4





no piece shall have a larger dimension than 2 inches, and the stone after passing the heating drums shall not contain less than 5 nor more than 15 per cent of material passing a No. 10 screen.

The stone will be heated not higher than 350° F., in suitable appliances. It is then to be thoroughly mixed by machinery with asphalt cement, such as is acceptable for surface cement, at 300° to 325° F.; penetration 100° to 200° F., in such proportions that the resulting binder will have life and gloss without an excess of cement. Should it appear dull from overheating or lack of cement, it will be rejected. While hot it will be hauled upon the work, spread upon the base so that when compacted it will be at least 1½ inches in thickness, and immediately rammed and rolled until it is cold. Should the resulting course not show a proper bond, it shall be immediately removed and replaced by the contractor.

The contractor shall not enter upon a hydraulic concrete base in order to lay the binder course until, in the opinion of the Engineer Commissioner, it has obtained sufficient strength for such a purpose, and during the period between laying base and binder he shall properly protect it, and when ordered by the Engineer Commissioner shall sprinkle it in warm weather, between the hours of sunset and sunrise, as often as may be deemed necessary, and in cold weather cover it with a material suitable for its protection.

Asphalt.—The crude asphalt shall be refined to the satisfaction of the Engineer Commissioner. It shall not at any time reach a temperature of 375° F.

Heavy petroleum oil.—The oil in use in the manufacture of asphalt cement shall be a petroleum from which the lighter oils have been removed by distillation, without cracking, until the oil has the following characteristics: Flash point, not less than 300° F.; distillate at 400° for 30 hours, less than 10 per cent. The flash point shall be taken in a New York State closed oil tester. The distillate shall be made with about 50 grams of oil in a small glass retort provided with a thermometer and packed entirely in asbestos. The residue in the retort after distilling must be fluid at 75° F., and not coarsely crystalline on cooling. Any other softening agents fulfilling the above tests, and approved by the Engineer Commissioner, may be used in place of petroleum oil.

Asphaltic cement.—When the refined asphalt is not already of the proper consistency the cement shall be prepared by tempering refined asphalt with heavy petroleum oil or other approved softening agent complying with the above specifications (at a temperature between 250° and 350° F.). The asphalt cement must not be inferior in quality to a cement made of the best quality Trinidad asphalt and petroleum residuum. Its penetration must be within the range of 60° and 120°, and will be fixed by the Engineer Commissioner. A variation of 10° from the degree decided upon will be sufficient cause for rejecting the mixture.

The asphalt cement must never be heated to a temperature exceeding 350° F.

Where asphaltic cement containing over 10 per cent of foreign matter is kept in storage it must be thoroughly agitated when used, as must also all dipping kettles while in use.

Samples of the asphaltic cement and of the petroleum oil shall be supplied to the inspector of asphalt and cements when required, and in suitable tin boxes and cans, and he shall have access to all branches of the works at any time.

Sand.—The sand in use shall be hard grained and moderately sharp. On sifting it should have at least 15 per cent of material that would be caught on a 40-mesh per inch screen, 25 per cent of material that will pass an 80-mesh to the inch screen, 10 per cent of which at least must pass a 100-mesh to the inch screen. If the sand to be used does not contain the desired fine material, limestone dust or other suitable material can be added to make up the deficiency.

Inorganic dust.—This shall be any inorganic dust not acted upon by water, the whole of which shall pass a 30-mesh screen and at least 75 per cent pass a 100-mesh screen.

Asphalt paving mixture.—The materials complying with the above specifications shall be mixed in proportions by weight, depending upon their character and the traffic on the street and upon the character of the asphalt, and will be determined by the Engineer Commissioner, but the percentage of bitumen in any mixture soluble in carbon bisulphide shall not exceed the limits, 9 to 13 per cent. If the proportions of the mixture are varied in any manner from those specified, the mixture will be condemned, its use will not be permitted, and, if already placed on the streets, it will be removed and replaced by proper materials at the expense of the contractor.

The sand or the mixture of sand and stone dust and the asphaltic cement will be heated separately to about 300° F. The dust, while cold, will be mixed with the hot sand in the required proportions and then mixed with the asphaltic cement at the required temperature and in the proper portion, in a suitable apparatus, so as to effect a thoroughly homogeneous mixture. Sand boxes and asphalt gauges will be

weighed in presence of inspectors as often as may be desired, and all samples desired shall be supplied in suitable boxes to the inspector of asphalt and cement, and he shall have access to all branches of the works at all times.

The pavement mixture prepared in a manner thus indicated will be brought to the ground in carts at a temperature of not less than 250° or more than 350° F., and if the temperature of the air is less than 60° F. the contractor must provide canvas covers for use in transit. It will then be thoroughly spread to a thickness of $2\frac{1}{2}$ inches by means of hot iron rakes in such manner as to give uniform and regular grade, so that, after having received its ultimate compression of about two-fifths, it will have a net thickness of at least $1\frac{1}{2}$ inches. This depth will be constantly tested by means of gauges furnished by the Engineer Commissioner. The surface will then be compressed by hand rollers, after which a small amount of hydraulic cement will be swept over it, and it will then be thoroughly compressed by a steam roller weighing not less than 175 pounds to the inch run, the rolling being continued for not less than five hours for every 1,000 yards of surface.

Asphalt blocks used are 12 inches long by 4 inches wide by 5 inches deep. They are made of what may be termed an asphalt concrete, molded under a pressure of 5,000 pounds to the square inch. The asphalt is required to fulfill the same conditions as stated above for sheet asphalt pavement. The blocks are laid ordinarily upon a gravel base, which has answered all purposes to date. The asphalt in this pavement is less liable to decay than in the case of sheet asphalt, and the blocks can be laid to the curb, forming their own gutter.

The first cost of this pavement is somewhat higher than that of sheet asphalt, but it needs much less repair in the cases where it has been used in this city, and its ultimate cost is believed to be no larger. I had hoped to give a table showing the cost of the different pavements for each year of their life, but unfortunately have been unable to have it prepared in time for insertion here. The asphalt block has been used almost entirely upon residence streets of light traffic, so that its behavior under heavy wear is not yet definitely determined. It has been found, however, that this pavement gives much better results when laid in hot weather than when laid in cold weather, the explanation being that the block being slightly softened by the heat, the edges compress somewhat under traffic, so as to make what is in effect a sheet pavement with practically very fine joints, while if laid in cold weather the block is brittle and the edges chip off slightly under the wheels, making the pavement more of the character of a vitrified brick pavement where the bricks have beveled edges. It is needless to say that the pavement laid in warm weather causes less noise than one laid in cold weather.

The railroad companies are finding considerable difficulty upon sheet asphalt streets in keeping the pavement in good condition close up to and against the rail. The Capital Traction Company and the Metropolitan Company both have the asphalt laid up to and between the tracks. The former has a 6-inch grooved rail, and owing to the vibration has to do a great deal of repairing, so that the maintenance of the pavement along its track is an expensive matter. The Metropolitan Company uses an 8-inch grooved rail; their Ninth street line has been in operation about two years, and their Georgetown line about fifteen months, and but little, if any repairs have been made as yet along the rails. The Columbia Company have brick along the outside of each rail and between the rails of each track. When the line was completed the outside bricks were laid at right angles to the rail and toothed into the asphalt, but they very promptly proved the rail; this was done more than two years ago and has given good results so far, the principal trouble encountered to date being due to the quality of the bricks.

The Capital Traction Company has on Pennsylvania avenue, between Fourteenth and Fifteenth streets, a double row of scoria blocks laid against the inside and the outside of each rail; these were put down about four months ago, and the time has not yet been sufficient to notice results.

It is the law that all street-car companies operating within the District are responsible for the pavement between and to a distance of 2 feet outside of their tracks, and all appropriations are made upon this basis. In case the company responsible for a pavement fails or neglects to keep it in repair the District is authorized to do the work, and must then proceed to recover the amount as follows:

In such case of the neglect or refusal of such railway company to perform the work required as aforesaid, the Commissioners of the District of Columbia shall issue certificates of indebtedness against the property, real or personal, of such railway company, which certificates shall bear interest at the rate of ten per centum per annum until paid, and which, until they are paid, shall remain and be a lien upon the property on or against which they are issued, together with the franchise of said company. And if the said certificates are not paid within one year the said Commissioners of the District of Columbia may proceed to sell the property against which they are issued, or so much thereof as may be necessary to pay the amount due, such sale to be first duly advertised daily for one week in some newspaper published in the city of Washington, and to be at public auction to the highest bidder.

This method works satisfactorily with such roads as are willing and able to keep their pavements in proper repair—that is, with those roads that do not need the law—but with some the matter has become so serious that it is necessary to ask for relief from Congress. The authorities of these roads pay no attention to the notices sent them to make the repairs necessary, and it is impossible to collect anything on the certificates of indebtedness, with the result that the pavements along these roads are rapidly passing from a badly dilapidated to a dangerous condition. Where the road is in the hands of a receiver, as is the case with two roads at present, the difficulties of making collection are vastly increased. As a remedy for this state of affairs, I would propose a law by Congress requiring each street-car company operating within the District limits to deposit with the collector of taxes a certain per cent of its gross income, say 4 per cent, until this deposit reached a sum amounting to \$600 per mile of single track within the district, this sum to be at the disposal of the Commissioners for pavement repairs and to be deposited with the Treasurer of the United States and held by him in the same manner as the guaranty of 10 per cent retained upon contracts is now held; that is, if the railroad authorities so elect, the amount can be invested in bonds the interest on which will be payable to the company, and upon rendition of bill for work done payment in cash can be made by the company, thus leaving the fund invested intact. If the company failed to pay in cash the bill rendered, sufficient bonds could be sold to cover the amount, and whenever the fund credited to any road was thus reduced to a sum equal to \$500 per mile of track the company should be again required to deposit 4 per cent of its gross income until the amount of \$600 per mile had been reached. In case the company failed at any time to deposit this 4 per cent when required authority should devolve upon the Commissioners to enforce its collection. When a track is owned by more than one company, the amount of \$600 per mile to be deposited for this portion should be divided proportionately among the companies using it.

It is believed that this system, or one similar to it, would enable the District authorities to keep the pavement between and adjacent

to street railway tracks in proper condition, while the present method is so ineffective that some of the streets near the center of the city have become grass-grown owing to the traffic having been diverted from them on account of the bad condition of the pavement along the car tracks.

The law is needed as much for the companies occupying the county roads as for those running through paved streets, for the necessity of keeping in good condition the driveway between and adjacent to the tracks is as important upon these roads as upon the city streets, and in many cases even more so, as there is no adjacent parallel street or road, free from tracks, that can be used. Upon nearly all of the main highways occupied by street car or trolley lines the rails project above the surface of the road to such an extent that driving across the tracks is impossible, and the condition of affairs amounts to a practical confiscation of that portion of the road by the company.

The attorney for the District has given an opinion to the effect that the Commissioners have no power to compel a street railway company to remove a piece of abandoned track upon one of the streets or to remove it themselves. Legislation remedying this state of affairs should if possible be obtained.

It has been the custom of Congress for several years past to make an appropriation for "Repairs to concrete pavements" and also one for "Current repairs to streets, avenues, and alleys," and I would most strongly recommend that these two be hereafter combined into one appropriation under the latter title. The latter, as hitherto made, has been much the smaller and entirely inadequate for the work dependent upon it, and the result has been that much has been left undone that could have been readily done had the pavement happened to be asphalt instead of some other material. If this change were made, repairs could be made in the order of their necessity and importance, a thing that is now impossible. Several cases have occurred where it was necessary to lay a new sidewalk under the assessment system because there were no funds to repair an old one, and the laying of the new walk was the only legal way of repairing the old one.

ALLEYS.

All pavements laid in alleys during the year were of vitrified brick or asphalt block, generally upon a gravel base, though where the traffic was exceptionally heavy a concrete base was used. The brick appears to make the better pavement for this use, as it resists the strong liquids and other deleterious matter which find their way to an alley better than the asphalt of the blocks, which do not wear so well here as in the streets. Where, however, a majority of the property owners interested have requested that the alley be paved with asphalt block that material has been used.

Attention was called in my report of last year to the undesirable condition resulting from the early unsystematic laying out of alleys and to the bad effects upon the sewer system in particular. More care has been exercised by the proper department during the past year than ever before to avoid unfavorable subdivisions, and the good effect has been marked; but if a suitable law were enacted for condemning alleys, a thing that is now lacking, considerable improvement could be obtained in several blocks, and in some cases the cost of condemnation, it is believed, would be less than the cost of the construction of a sewer solely to carry off the rainwater, which would be unnecessary with a properly shaped alley. The present law is slow of operation,

defective in not giving the Commissioners authority to originate action and in some other respects, and is expensive. A suitable law should be passed at as early a date as possible.

SIDEWALKS.

Cement and brick walks were the only kinds laid during the year. A number of plank walks upon the outlying streets and roads were removed, owing to their dangerous condition, and orders were given not to put down any more of this material. Experiments are now being made with different kinds of cheap walks, and it is believed that something satisfactory for use, at small cost, among the more important outlying roads will be in use before the season is over.

The changes made in cement walks during the year have been in reducing the size of the blocks, so that none are now permitted larger than $3\frac{1}{2}$ feet in any dimension, and in using gravel for the concrete body, to the exclusion of broken stone. The cutting of the joints has been greatly facilitated by this change, and it is believed a better result is thus obtained, and the price has also been materially reduced.

The new curb used has been 8 by 8 inches and 6 by 20 inches granite. Cement curb is being made, which, it is believed, can be used with economy on residence streets subject only to light travel, though its manufacture is too recent to permit the stating of results.

ROADS.

The county roads of the District were kept in as good repair during the year as the funds in the possession of the department would permit, but the amount usually appropriated is not sufficient to keep all the roads in good condition and also put in proper shape some of the longer and more heavily traveled thoroughfares, which have been gradually worn out, so that a renewal of their surface throughout their whole length is needed. An instance of this is the Canal road, running from M street, in West Washington, along the river to the Chain Bridge. It was macadamized some years ago and still has a good base, but the surface has entirely worn off, leaving the roadway very uneven and also very rough from projecting stones. To put a proper surface upon this road will cost about \$12,000, an amount that can not be spared to do this work when only \$40,000 is the total sum appropriated for all the roads and streets not paved with asphalt outside of Florida avenue, and it is already impossible to keep them in proper shape with that sum. Hamilton road is in the same condition, and it, the Canal road, Seventh Street road, and Bladensburg road all require special appropriations, and I would recommend that they be procured if possible. Wisconsin avenue or Tennallytown road, Bennings road, and Connecticut avenue extended are also in a most dilapidated condition and a source of constant complaint; in short, the main thoroughfares are, without exception, in an extremely bad state, and the minor roads are rapidly approaching the same condition in spite of all that can be done to prevent it with the funds available.

Following the custom of former appropriation bills, the appropriation for county roads has been applied to the same geographical limits as when Washington was much smaller, with the result that as the city grew suburban street after street was added to an appropriation that was originally intended for county roads alone, and as the travel over the roads and the wear and tear upon them has increased owing to the growth of population the funds available for keeping them in repair have gradually been practically diminished by requiring them to be applied to an increasing mileage.

In 1877 there were 29.3 miles of suburban streets; in 1887 there were 39.3 miles of suburban streets; in 1897 there are 71.9 miles of suburban streets.

The appropriation for this year is \$40,000 for keeping all the county roads and suburban streets in repair. The appropriation for 1887 was \$40,000. The population of the District and surrounding country and suburban towns has largely increased during the past ten years, with the result that the county roads have had vastly heavier traffic than formerly, while the same amount of money has had to take care of them under this increased wear, and has had to be applied also to more than 30 miles of new streets.

The difficulty of keeping these county roads in repair under these conditions is quite evident.

I would also request that an estimate be presented to Congress for \$4,000 for the purpose of sprinkling county roads and suburban streets. This work of sprinkling should be done on account of the convenience to the public, who now suffer greatly under the present dusty state of the roads, and is also generally needed as a matter of keeping the roads in proper repair. A road properly sprinkled wears much longer and remains in good condition a much greater length of time than one which is not sprinkled. Many of our principal roads, owing to the amount of dust upon them during the past year, have afforded anything but pleasant driving.

BRIDGES.

The accompanying report of Mr. George H. Bailey states what has been done in this department during the past year. There have been two appropriations, "For ordinary care of bridges" and "For construction and repair of bridges." These two are practically identical in purpose, and it is recommended that they be consolidated hereafter under one heading entitled "Construction, repair, and care of bridges." It would save much clerical work in the office without interfering in any way with the work in the field.

An increased appropriation is greatly needed for this purpose. Formerly the amount allowed for the bridges of the District was \$25,000 a year. The recent appropriations have not been sufficient to keep the bridges in proper repair and they are rapidly deteriorating.

An instance of the manner in which this insufficiency of funds operates is the Aqueduct Bridge. Recently the top of the joists to which the flooring is fastened became so rotten that the nails would no longer hold. The funds in the possession of the department were not sufficient to purchase new timber for joists, so that they had to be turned over with the rotten side down. This gave holding power for the nails, but the flooring system is of course weaker than it should be, and it is only a short time before new joists will have to be provided throughout the entire bridge. The result will then be that some other bridge will have to seriously suffer. Several of the bridges upon the county roads have become so weak in the flooring system that it is impossible to run the steam road roller employed upon the county roads over them.

The Navy-Yard Bridge across the Eastern Branch has been recognized for several years to be in a weak condition and totally inadequate for the travel put upon it, and at present a chartered railway company is unable to operate its cars with safety across it. Estimates have been submitted for several years past for a new structure near the site of the present bridge, at an estimated cost of \$250,000, and I would urgently recommend that an appropriation for this purpose be

secured, if possible, and authority granted the Commissioners to sell, to use at other localities, or to dispose of the old bridge in a manner considered most advantageous to the District.

The plan for the new bridge contemplates a steel-girder bridge with spans of approximately 50 feet and a clearance of 20 feet at low tide, which will readily permit tugs and barges to pass. The stream has become so contracted that sailing craft no longer attempt to use the portion of the river above the bridge; but a draw could be inserted if found advisable. Several of the spans of the old bridge could be very advantageously used in bridging Rock Creek upon proposed roads and driveways in Rock Creek Park; the length of span is believed to be just about what could be used.

SEWERS.

During the year 20,862 feet, or 3.95 miles, of main sewer were built and 71,545 feet, or 13.55 miles, of new pipe sewers were laid, while 12,053 feet, or 2.28 miles, of defective pipe sewers laid under the old board of public works were replaced. This made the total length of main sewers in the District on June 30 to be 429,569 feet, or 81.36 miles, and of pipe sewers (i. e., sewers 24 inches in diameter or smaller) to be 1,499,811 feet, or 284.06 miles.

The work has been done in the same manner as formerly; that exceeding \$1,000 in cost being performed under contract, as required by law, while work involving less than that sum has been done by hired labor. The eight-hour day has been observed upon all District work under this department, whether by contract or day labor. On work of the latter class the rates of pay were as follows:

Foreman, \$4; laborers, first class, \$1.75; second class, \$1.50; masons and bricklayers, \$4; watchmen, \$1.50; water boys, 75 cents; 2-horse wagon, with driver, \$3.50; 1-horse cart, with driver, \$1.75.

The materials for all sewers built by hired labor were purchased under contract in large quantities and stored until needed in the several property yards.

The prices paid during the year were as follows:

24-inch pipe.....	\$0.50	24 by 6 inch Y-pipe.....	\$2.20
21-inch pipe.....	.35	21 by 6 inch.....	1.57
18-inch pipe.....	.26	18 by 6 inch.....	1.15
15-inch pipe.....	.19	15 by 6 inch.....	.85
12-inch pipe.....	.13	12 by 6 inch.....	.58
10-inch pipe.....	.10	10 by 6 inch.....	.45
8-inch pipe.....	.07	8 by 6 inch.....	.30
6-inch pipe.....	.05	6-inch bends.....	.15
Natural cement.....	.75	Portland cement.....	2.09
Concrete sand.....	.45	Manhole frame.....	2.90
Screened sand.....	.65	Manhole cover.....	1.50
Screened pebbles.....	.59	Manhole irons.....	.09½
No. 1 alley grate and frame.....	7.00	No. 2 alley grate and frame.....	4.50
Invert block.....	.39½	Vitrified sewer brick.....	15.50
Sewer brick at brick company yards.....	5.90		

Under these conditions the cost of the different sizes of sewers was as shown in Table 12 of the report of Mr. McComb, superintendent of sewers, page —.

The formulas used in computing the sizes of the sewers have remained the same as for several years past. These formulas and the methods of construction were explained in detail in my report for the year ending June 30, 1895, and are therefore not repeated here.

Some improvement has been made in the cleaning of catch basins

by using large iron carts hauled by horses condemned by the fire department and turned over without cost to the sewer department, instead of employing hired carts. A saving of about \$5 per day has resulted from the use of the three large iron carts now employed, and by equipping all the cleaning gangs with them it is believed that this amount will be nearly doubled. A graphical table showing the work of basin cleaning is inserted, which illustrates the work done during the year.

During the year considerable progress was made upon the Rock Creek intercepting sewer, and also upon the F street portion of the Easby Point intercepting sewer. When these two interceptors are finished, which will be early during the present working season, all will have been accomplished for the sewage disposal of the city that is possible prior to the completion of the sewage-disposal system, with the exception of the building of the east side intercepting sewer. The James Creek Canal and the B Street Canal must remain the polluted ponds they now are, and the insanitary condition along the Anacostia and the entire eastern front of the city must continue until the sewage-disposal system is completed. No further relief will be possible.

Attention has been so frequently called to this detrimental condition that it is not believed advisable to repeat here what has been so frequently stated before, but I would urge that efforts be made to make the Members of Congress and prominent citizens of the city personally acquainted with the highly insanitary state of affairs which exists along the river front and to within 800 yards of the White House itself. It is believed that the people in general and the Members of Congress are unacquainted with the actual condition of affairs, or some success would have met with the Commissioners' efforts to have it remedied. In case an appropriation can not be secured directly, I would strongly recommend the issuance of bonds for the purpose.

Mr. McComb, superintendent of sewers, makes a recommendation in his report that assessment for sewers be made upon the area of the lot instead of upon its frontage, as at present. With this recommendation I can not concur, because the building space depends, so far as sewers are concerned, upon frontage, and not upon depth. A lot 20 feet wide and 40 feet deep is likely to require as much sewer service as one 20 feet wide and 100 feet deep, and is also likely to require as much as a lot 20 feet wide and 200 feet deep, only one sewer being ordinarily provided for one lot. It is not denied that in the case of a few oblique-cornered lots the present law causes somewhat heavy charges, but these exceptions are so few that I do not believe it advisable to attempt to change a law which has stood the test of the courts and is believed to be the fairest that has yet been enacted.

The act providing a permanent form of government for the District of Columbia requires a contractor doing work for the District to give bond equal to the estimated cost of doing the work under the contract. This, under a continuing appropriation, causes, it is believed, considerable disadvantage to the District and increases the expense of the work. On the Tiber Creek and New Jersey avenue intercepting sewer there is a very good illustration of the point. Congress made an appropriation of \$50,000 for beginning this work, and authorized the Commissioners to enter into a contract for the portion between the foot of New Jersey avenue and the Capitol Grounds, at a cost not to exceed \$500,000. The successful bidder has entered into a contract with a bond equal to the estimated cost of his work, which amounts to \$289,000. This bond will have to be carried by the contractor for several

years. The result is that private parties are not willing to give their personal bonds upon a contract of indefinite length, and nearly all the contractors upon these continuing-appropriation contracts have presented surety companies as bondsmen. These companies charge for the bonds, and the result is that the District has to pay for the carrying of the heavy bond of the contractor, and thus pays several thousand dollars more than it would have to if the Commissioners were allowed to accept bond equal to the amount appropriated for each season's work, or a percentage of this amount. I would recommend that authority be secured upon continuing-appropriation contracts to accept a bond for each season's work separately, and also that a bond be required from contractors varying from two-thirds to the whole cost of the work, in the discretion of the Commissioners. It is believed that in this manner several thousand dollars can be saved to the District each year.

Considerable difficulty having been experienced at times in obtaining information concerning some of the earlier sewers, no authentic records of them having been kept, the following brief history and statement of authority for their construction has been prepared under my direction by Mr. McComb. (See pages 103 to 149.)

It is hoped that this information being rendered accessible will be the means of inducing many of the citizens of Washington who took a prominent part in the former systems of government for the District, to assist the office by facts from their memory and private papers to gather more of the missing data. The list has been arranged by streets in periods, as that seemed the best for ready reference.

PLUMBING DEPARTMENT.

The work done by this department is shown in the appended report of Mr. Charles B. Ball, inspector of plumbing. The service rendered by this office seems to be appreciated more and more each year by the public, and it is believed that the efficiency of the service rendered has been gradually improved.

TESTING OF ENGINEERING MATERIALS.

The work performed in this office is shown in the appended report of Mr. A. W. Dow, inspector of asphalt and cements. Mr. Dow prepared a paper last fall for presentation to the American Society of Municipal Improvements which it is believed can be inserted here with advantage, and it is annexed to his report.

OFFICE OF THE SUPERINTENDENT OF PROPERTY.

The work done in this branch of the office is set forth in the report of Mr. L. T. Boisseau, superintendent of property.

Article 1 of section 5 of the act providing a permanent form of government for the District of Columbia requires that repairs to streets, avenues, alleys, or sewers, and new constructions exceeding \$1,000 in cost shall be made under contract.

Under this clause it has been the ruling of the Treasury Department that supplies amounting in cost to \$1,000 or over must be purchased under contract also. The District does a great deal of work by hired labor, for which material has to be purchased in addition to that supplied to contractors, and with the \$1,000 limit which has been imposed by the ruling of the Treasury Department serious inconvenience has at times been caused. It has upon some occasions led

to combinations of bidders, knowing that the District authorities were bound down by the ruling of the Treasury Department in this manner. An instance of this occurred in 1893, when bids were asked for sewer pipe. The bids as received were as follows:

Bidder.	Pipe (per linear foot).							
	6-inch.	8-inch.	10-inch.	12-inch.	15-inch.	18-inch.	21-inch.	24-inch.
Potomac Terra Cotta Co. a.....			\$0.16	\$0.20	\$0.30	\$0.41	\$0.61	\$0.90
T. Somerville & Sons.....	\$0.07½	\$0.12	.17	.21	.30½	.42	.62	.92½
American Sewer Pipe Co. a.....				.21	.31			
McMahan, Porter & Co. a.....	.08	.12½	.16½	.21½	.31½	.42½	.65	.95
State Line Fire Brick and Sewer Pipe Co.....	.07½	.11½	.16½	.21½	.31½	.42½	.63	.82
Freeman Fire Clay Co. a.....				.20	.31	.41		.91
T. Somerville & Sons a.....	.10	.15	.22	.24	.43	.56	.82	.99
State Line Fire Brick and Sewer Pipe Co.....	.10½	.17	.22	.25	.40	.56	.88	1.08
Freeman Fire Clay Co.....				.26	.42	.52	.84	1.02
Union Sewer Pipe Co.....				.28	.40	.55		
Potomac Terra Cotta Co.....	.11	.16	.21	.27	.38	.55	.83	1.00
McMahan, Porter & Co.....				.27½	.41	.58	.85	1.05

Bidder.	Y-branches (each).						
	8 by 6.	10 by 6.	12 by 6.	15 by 6.	18 by 6.	21 by 6.	24 by 6.
Potomac Terra Cotta Co. a.....		\$0.70	\$0.92	\$1.38	\$1.90	\$2.75	\$3.75
T. Somerville & Sons.....	\$0.60	.77	.97	1.43	1.94	2.95	3.95
American Sewer Pipe Co. a.....			.95	1.40			
McMahan, Porter & Co. a.....	.62	.75	.96	1.40½	1.91½	2.90	3.85
State Line Fire Brick and Sewer Pipe Co.....	.31	.44	.96	1.41	1.92	3.00	3.66
Freeman Fire Clay Co. a.....			.93	1.39	1.90		
T. Somerville & Sons a.....	.66						
State Line Fire Brick and Sewer Pipe Co.....	.70	.97	1.16	1.80	2.50	3.85	4.75
Freeman Fire Clay Co.....			1.20	1.82	2.49	3.75	4.60
Union Sewer Pipe Co.....			1.25	1.83	2.50		
Potomac Terra Cotta Co.....	.66	.95	1.25	1.80	2.47	3.60	4.65
McMahan, Porter & Co.....			1.20	1.85	2.56	3.73	4.63

Bidder.	6-inch 1-bends (each).	6-inch 1-bends (each).	Vitrified sewer blocks (per linear foot).	Vitrified sewer bricks (per M).		Date of opening.
				No. 1.	No. 2.	
A. Lamond.....			\$0.50			July 16, 1892
New England Steam Brick Co.....					\$16.50	
Potomac Terra Cotta Co. a.....						
T. Somerville & Sons.....	\$0.27	\$0.27				
American Sewer Pipe Co. a.....						
McMahan, Porter & Co. a.....	.29	.29	.60	\$25.00	19.00	
State Line Fire Brick and Sewer Pipe Co.....	.27½	.27½		18.50		
Freeman Fire Clay Co. a.....						
T. Somerville & Sons a.....	.36					June 3, 1893 ^h
State Line Fire Brick and Sewer Pipe Co.....	.38		1.00	18.80		
Freeman Fire Clay Co.....						
Union Sewer Pipe Co.....						
Potomac Terra Cotta Co.....	.36					
McMahan, Porter & Co.....			.60			
J. A. Hayden.....					$\left\{ \begin{array}{l} b\ 17.75 \\ c\ 17.90 \\ d\ 18.85 \\ e\ 17.35 \end{array} \right.$	
A. Lamond.....			.50			
Savage Fire Brick Co.....					$\left\{ \begin{array}{l} f\ 16.45 \\ g\ 16.95 \\ h\ 17.25 \end{array} \right.$	

a Bid accepted.
d Large size.
g Class 2.

b Ordinary.
c Small size.
h All bids rejected on account of prices being too high.

e Repressed.
f Class 1.

a Bid accepted.
d Large size.
g Class 2.

b Ordinary.
c Small size.

c Repressed.
f Class 1.

^h All bids rejected on account of prices being too high.

Captain Derby, then in charge of the office, managed, however, by personal efforts to secure pipe in open market from McMahan, Porter & Co., of New Cumberland, W. Va., at the following prices: Pipe, 6-inch, \$0.0675; 8-inch, \$0.108; 10-inch, \$0.144; 12-inch, \$0.18; 15-inch, \$0.27; 18-inch, \$0.369; 21-inch, \$0.549, and 24-inch, \$0.81; Y-branches, 8 by 6, \$0.57; 10 by 6, \$0.665; 12 by 6, \$0.874; 15 by 6, \$1.311; 18 by 6, \$1.805; 21 by 6, \$2.613; 24 by 6, \$3.563.

Trouble was afterwards encountered with the Treasury Department in regard to the purchase of this pipe, that Department ruling that as the amount of the purchase exceeded \$1,000 it should have been made by contract instead of being purchased in open market, and considerable difficulty was encountered in having the vouchers passed and the account paid. It is recognized that it is ordinarily more advantageous to purchase large amounts of material under contract than in open market, but the interpretation placed upon article 1 of section 5 by the Treasury Department seems forced, and I would recommend that an effort be made to secure a change in the ruling of that Department, and if not successful that the necessary legislation to afford relief be secured from Congress.

Very respectfully,

LANSING H. BEACH,
Captain, Corps of Engineers.

Capt. W. M. BLACK,
*Corps of Engineers, U. S. A.,
Engineer Commissioner, District of Columbia.*

Statement of employees temporarily employed, showing appropriation from which paid, for fiscal year 1896-97.

Class.	Num. ber.	Current repairs to streets, avenues, and alleys.	Assess-ment and permit work.	Replacing sidewalks and curbs around public res-ervations.	Repairs to concrete pave-ments.	Improve-ments and repairs.
Inspectors.....	6	\$5.50	\$753.37	\$18.63	\$3,133.00	-----
Foremen.....	5	2,455.00	2,340.00	54.00	99.00	\$108.00
Other employees.....	291	15,313.40	18,009.86	411.69	524.69	632.10
Total.....	302	17,803.90	21,103.23	484.32	3,756.69	740.10

Class.	Num. ber.	Repairs to county roads.	Yale, etc., streets.	Appro- priation for P street.	Rock Creek and B street intercept- ing sewer.	High- service distribu- tion.
Inspectors.....	6	-----	-----	-----	-----	-----
Foremen.....	5	-----	\$14.00	\$28.00	\$20.00	\$8.00
Other employees.....	291	\$61.37	87.42	106.25	111.50	35.00
Total.....	302	61.37	101.42	134.25	131.50	43.00

Class.	Num. ber.	Public schools.	Engine houses.	Market houses.	Whole cost of work.	Total.
Inspectors.....	6	-----	-----	-----	\$60.00	\$3,970.50
Foremen.....	5	\$20.00	\$48.00	\$6.00	2.00	5,232.00
Other employees.....	291	100.45	205.74	26.25	9.00	35,634.72
Total.....	302	120.45	253.74	32.25	71.00	44,837.22

REPORT OF THE COMPUTING ENGINEER.

WASHINGTON, *July 20, 1897.*

SIR: I have the honor to submit the following as the operations of this office for the year ending June 30, 1897:

The following summary shows the amount of work done on streets and avenues, under the appropriation for "Improvements and repairs: "

Asphalt on 6-inch concrete base	square yards ..	44,368.65
Asphalt on 8-inch concrete base	do	543.26
Asphalt block	do	9,271.91
Macadam roadway	do	5,333.94
Gravel roadway	do	16,065.05
Grading (ordinary)	cubic yards ..	43,772
Grading (Macadam)	do	3,853.88
Old cobble removed	square yards ..	19,254.31
Old curb removed	linear feet ..	9,703.40
Curb reset	do	12,665.29
Curb set	do	15,410.66
Brick sidewalks relaid	square yards ..	5,670
Vitrified brick gutters	do	6,216.24
Cobble gutters and crossings	do	5,722.17

The details of this work are shown by the annexed schedule, marked A. This work was done by contract, excepting a small amount of curb setting and relaying brick sidewalks, which was done by day labor employed by the superintendent of streets and paid for out of the appropriation for "Improvements and repairs."

The following prices have been paid:

Sheet asphalt on 8-inch hydraulic base, exclusive of grading, per square yard	\$1.83
Sheet asphalt on 6-inch hydraulic base, exclusive of grading, per square yard	1.63
Asphalt block on gravel base	1.77
Macadam roadway .....	.77½
Gravel roadway	\$0.10½ to .13
Setting 6 by 20 granite curb, including haul, per linear foot .....	.18
Setting 8 by 8 granite curb on concrete base, per linear foot .....	.35
Laying vitrified block gutters on concrete base, per square yard	1.25
Cost of vitrified block \$20.85 to \$21.75 per M, making cost of gutters complete, per square yard	\$2.12 to 2.16
6 by 20 granite curb, delivered at property yard, per linear foot:	
Straight .....	.65
Circular .....	.82
8 by 8 granite curb, delivered at property yard, per linear foot:	
Straight .....	.52½
Circular .....	.67½
Laying cobble gutters, per square yard	\$0.17 to .18
Cobble taken up and moved to property yard, per square yard .....	.12
Curb taken up and moved to property yard, per linear foot .....	.08
Grading on paved streets, ordinary, per cubic yard .....	.35
Grading on paved streets, Macadam, per cubic yard .....	.50
Grading on graded and regulated streets, per cubic yard .....	.14
Overhaul, per cubic yard, per 500 feet over 2,500 .....	.02½

WORK DONE UNDER APPROPRIATION FOR "CONSTRUCTION OF COUNTY ROADS, 1897."

Sherman avenue.—275 linear feet of wall, average height 8 feet; 675 linear feet post and top-rail fence wire stringers; 15,000 cubic yards grading; 3 houses moved where land was donated. Appropriation, \$10,000.

Columbia road and streets in Meridian Hill.—22,000 cubic yards grading; repairs to gravel roadways. Appropriation, \$5,000.

Massachusetts avenue extended.—54,000 cubic yards grading. Appropriation, \$10,000.

Albemarle street.—3,000 cubic yards grading; land purchased. Appropriation, \$9,000.

Illinois avenue.—32,000 cubic yards grading. Appropriation, \$5,000.

Pierce and High streets.—11,500 cubic yards grading; blind drain, 350 feet by 3 by 14 feet; 3,400 square yards gravel roadway; 500 square yards cobble gutter; 540 linear feet bluestone curb set; 700 square yards brick sidewalk laid. Appropriation, \$3,000.

Connecticut avenue extended.—42,000 cubic yards grading; 1,100 square yards cobble gutter laid; 1,100 square yards cobble gutter relaid; banks sown with grass seed and honeysuckle planted; miscellaneous repairs. Appropriation, \$10,000.

Road connecting Chevy Chase Circle with Broad Branch road.—20,000 cubic yards grading; 1,234 square yards cobble gutter laid; 1,467 square yards Macadam roadway laid; 90 feet terra-cotta pipe. Appropriation, \$5,000.

Yale, Bismarck, etc., streets.—42,000 cubic yards grading; 4,235 square yards cobble gutter laid; 16,000 square yards gravel roadway; 2,793 linear feet granite curb set. Appropriation, \$17,000.

Table B shows the amount of work under appropriation for "Renewal, resurfacing, and repairs to concrete pavements." On several of the streets originally laid with coal-tar and bituminous-base pavements they were found to be so rotten and so rough by frequent resurfacing in places that the only effectual mode of repair was to remove the old pavement and lay new asphalt pavements on hydraulic base. In many other streets the coal-tar pavement has been partially or entirely removed and replaced by asphalt in order to preserve the proper grade and crown to the roadway. N street, between Twenty-eighth and Thirtieth, and Fourth street SE., between East Capitol and B, originally laid with asphalt blocks in 1883 and 1883, have been surfaced with asphalt.

The work done at cost of the various street railroad companies, consisting principally of paving the space of 2 feet adjacent to the tracks, is shown by Table C.

Tables D, E, and F are summary and detailed statements giving the square yards and mileage of street pavements to July 1, 1897.

Respectfully submitted.

C. B. HUNT, *Computing Engineer.*

The ENGINEER COMMISSIONER OF THE DISTRICT OF COLUMBIA.

(Through Capt. L. H. Beach.)

Street railways in the District of Columbia, July, 1897.

Name of company.	Motive power.	Mileage operated.			
		Tracks owned by company.		Tracks owned by other companies.	
		Double.	Single.	Double.	Single.
Capital Traction (Rock Creek and Washington and Georgetown).	Underground and overhead electric and cable.	16.33	-----	-----	-----
Metropolitan	Underground electric.	10.21	3.70	-----	-----
Columbia	Cable	2.86	-----	-----	-----
Eckington and Soldiers' Home	Overhead electric and horse.	7.13	1.57	.89	.23
Belt Line	Horse	5.90	1.22	.08	-----
Brightwood	Overhead electric	4.60	1.90	-----	-----
Tennallytown	do	4.30	-----	-----	-----
Anacostia and Potomac River	Horse	5.42	.23	1.27	-----
Washington and Great Falls	Overhead electric	3.70	-----	-----	-----
Washington, Alexandria, and Mount Vernon.	Underground electric.	α.90	.33	-----	-----
Capital	Underground and overhead electric.	-----	1.32	1.22	.20
Maryland and Washington	Overhead electric	52.28	-----	-----	-----
Total		63.63	10.27	3.46	.43

α New electric construction of Belt Line route on Fourteenth street.

b Incomplete. Capital Railway adapted Anacostia track to electric system.

TABLE B.—Repairs to concrete pavements, year ending June 30, 1897.

Locality.	Year laid.	Square yards.	Contract work.	Extra work.	Total cost.	Original pavement.
L street NW., Twelfth to Fourteenth.	1877	3,931.29	\$6,060.25	\$640.01	\$6,700.26	Coal tar.
Eighteenth street NW., M to Massachusetts avenue.	1873	4,606.42	7,468.09	741.17	8,209.26	Do.
H street NW., Fifteenth to Vermont avenue.	1874	2,421.63	5,954.59	410.72	6,365.31	Do.
Connecticut avenue NW., Q to R....	1873	3,205.91	5,608.28	374.30	5,982.58	Do.
F street NW., Nineteenth to Twenty-first.	1873	4,047.98	6,514.81	525.38	7,040.19	Do.
P street NW., Twenty-second to bridge and west of bridge.	1872	930.67	1,854.52	110.16	1,964.68	Do.
N street NW., Twenty-eighth to Thirtieth.	1882	1,604.39	2,588.47	8.28	2,596.75	Asphalt block, surfaced with asphalt.
C street SW., First to Sixth.	1887	7,851.79	17,383.04	2,304.36	19,687.40	Coal tar.
E street SW., Second to Third.	1887	1,510.83	3,219.61	548.63	3,768.24	Do.
H street SW., Third to Four-and-a-half.	1887	2,388.04	5,006.37	874.28	5,880.65	Do.
First street E., between B street N. and B street S.	1873	6,842.85	14,941.36	1,178.71	16,120.07	Do.
Fourth street SE., East Capitol to Pennsylvania avenue.	1883	3,445.94	5,702.68	47.95	5,749.77	Asphalt block, surfaced with asphalt.
Ninth street NW., F to G, east side.	1875	595.11	1,107.45	131.85	1,239.30	Coal tar.
Sixteenth street, intersection of U.	1883	262.47	631.85	.....	631.85	Asphalt.
Phelps place, Leroy to California.	.....	1,003.80	1,942.16	198.91	2,141.07	Coal tar, originally laid at private expense.
Eleventh street NW., H to I.	1875	190.08	237.60	.....	237.60	Coal tar, vitrified block gutters.
Minor repairs on various streets.	.....	.....	.....	.....	94,314.98	.....
Sewer traps, water boxes, tools, etc.	.....	.....	.....	.....	44,135.07	.....
Inspection, office expenses, etc.	.....	.....	.....	.....	1,375.80	.....
Vitrified block.	.....	.....	.....	.....	6,283.34	.....
.....	.....	.....	.....	.....	3,203.35	.....
.....	.....	.....	.....	.....	149,312.54	.....

TABLE C.—Work done at cost of railroad companies, year ending June 30, 1897.

Company.	Street.	From—	To—	Amount.
Capital Traction	M, NW	Twenty-eighth	Thirty-first	\$13.09
	Twenty-sixth, NW	Pennsylvania avenue.	M	6.10
	M, NW	Thirty-third	Thirty-sixth	950.03
	U, NW	Sixteenth	Eighteenth	1,130.34
	Fourteenth, NW	U	Euclid	1.90
	Florida avenue.	Sixth	Seventh	5.63
	Eighteenth	Florida avenue	Columbia road	998.28
	First and Maryland avenue SW.	.....	.....	112.52
	L SE., near Eighth.	.....	.....	4.62
	U, NW	Ninth	Tenth	54.04
	M, NW	Bridge	Thirty-first	52.23
	Do	Thirty-first	Thirty-second	171.95
	Pennsylvania avenue and Fifth.	.....	.....	5.43
	.....	.....	.....	3,506.21
	Fifth, NW	G	New York avenue	143.72
	Do	Fifth	Ninth	92.49
	First and E. NW	Tenth	Thirteenth	92.22
	Sixth and G. NW	.....	.....	5.11
Eckington and Soldiers' Home.	North Capitol	G	I	5.36
	G. NW	North Capitol	New Jersey avenue	6.84
	D. NE	Maryland avenue	Ninth	4.87
	Fifth and I. NW., intersection.	.....	.....	434.05
	Fifth, NW	.....	.....	2.71
	G. NW	G	K	13.82
	Do	Fifth to Eleventh	Seventh to Fifteenth	144.44
	Do	Ninth	Eleventh	17.39
	Fifth, NW	Fifth	Seventh	74.94
	Ninth and G, intersection.	G	New York avenue	209.18
	.....	.....	.....	3.54
	.....	.....	.....	1,250.08

street improvements,

NORTHWEST.

tract work.

curb oved.	Straight curb reset.	Circular curb reset	Total cost of street.	Name of contractor.
<i>Linear feet.</i>	<i>Linear feet.</i>	<i>Linear feet.</i>		
37	31.30	-----	\$3,381.75	Barber Asphalt Paving Co.
34.50	10	-----	5,507.62	Do.
74	46.70	9.3	3,959.73	Do.
71	153.60	-----	13,402.99	Do.
45.17	40.58	9.4	2,671.56	Do.
70	-----	-----	5,304.53	Do.
-----	15.70	-----	10,742.27	Do.
42.03	42.44	-----	5,124.62	Do.

SOUTHWEST.

30	2,107.65	-----	\$8,688.50	Washington Asphalt Block and Tile Co.
38	2,439.60	28.5	40,492.93	Do.
73	458	28.2	2,832.71	Barber Asphalt Paving Co.

SOUTHEAST.

0	986.53	-----	\$3,553.35	Barber Asphalt Paving Co.
30	115	-----	1,017.24	Washington Asphalt Block and Tile Co.
-----	230	-----	1,519.09	James Frawley.
0	119.47	-----	6,193.91	Do.
5	57.28	-----	9,351.81	Barber Asphalt Paving Co.
-----	-----	-----	2,921.67	Do.
-----	-----	-----	5,154.82	Washington Asphalt Block and Tile Co.
4	-----	87.5	-----	Barber Asphalt Paving Co.

NORTHEAST

5	1,486.06	-----	16,788.00	Barber Asphalt Paving Co.
-----	-----	-----	-----	Fred Fritz.
1.60	564.46	-----	2,304.77	M. F. Talty.
9.2	34.60	-----	7,224.45	Barber Asphalt Paving Co.
2	150.20	-----	4,257.20	Do.
-----	-----	-----	6,788.18	Do.
8.90	711.15	-----	1,143.28	James Frawley.
-----	-----	-----	2,724.13	Barber Asphalt Paving Co.
-----	-----	-----	-----	Do.

GEORGETOWN.

6	2,219.22	35.85	0,823.82	Barber Asphalt Paving Co.
7	431.10	15.80	1,926.08	Do.

b Includes cost of r

TABLE B.—Repairs to concrete pavements, year ending June 30, 1897.

Locality.	Year laid.	Square yards.	Contract work.	Extra work.	Total cost.	Original pavement.
L street NW., Twelfth to Fourteenth.	1877	3,931.29	\$6,060.25	\$640.01	\$6,700.26	Coal tar.
Eighteenth street NW., M to Massachusetts avenue.	1873	4,006.42	7,468.09	741.17	8,209.26	Do.
H street NW., Fifteenth to Vermont avenue.	1874	2,421.63	5,954.59	410.72	6,365.31	Do.
Connecticut avenue NW., Q to R....	1873	3,205.91	5,608.28	374.30	5,982.58	Do.
F street NW., Nineteenth to Twenty-first.	1873	4,047.98	6,514.81	525.38	7,040.19	Do.
P street NW., Twenty-second to bridge and west of bridge.	1872	930.67	1,854.52	110.16	1,964.68	Do.
N street NW., Twenty-eighth to Thirtieth.	1882	1,604.39	2,588.47	8.28	2,596.75	Asphalt block, surfaced with asphalt.
C street SW., First to Sixth.....	1887	7,851.79	17,383.04	2,304.36	19,687.40	Coal tar.
E street SW., Second to Third.....	1887	1,510.83	3,219.61	548.63	3,768.24	Do.
H street SW., Third to Four-and-a-half.	1887	2,388.04	5,006.37	874.28	5,880.65	Do.
First street E., between B street N. and B street S.	1873	6,842.85	14,941.36	1,178.71	16,120.07	Do.
Fourth street SE., East Capitol to Pennsylvania avenue.	1883	3,445.94	5,702.68	47.95	5,749.77	Asphalt block, surfaced with asphalt.
Ninth street NW., F to G, east side..	1875	595.11	1,107.45	131.85	1,229.30	Coal tar.
Sixteenth street, intersection of U..	1883	262.47	631.85		631.85	Asphalt.
Phelps place, Leroy to California.....		1,008.80	1,942.16	198.91	2,141.07	Coal tar, originally laid at private expense.
Eleventh street NW., H to I.....	1875	190.08	237.60		237.60	Coal tar, vitrified block gutters.
Minor repairs on various streets.....					94,314.98	
Sewer traps, water boxes, tools, etc.....					44,135.07	
Inspection, office expenses, etc.....					1,375.80	
Vitrified block.....					6,283.34	
					3,203.85	
					149,312.54	

TABLE C.—Work done at cost of railroad companies, year ending June 30, 1897.

Company.	Street.	From—	To—	Amount.
Capital Traction	M. NW.	Twenty-eighth	Thirty-first	\$13.09
	Twenty-sixth, NW.	Pennsylvania avenue.	M	6.10
	M. NW.	Thirty-third	Thirty-sixth	950.03
	U. NW.	Sixteenth	Eighteenth	1,130.34
	Fourteenth, NW.	U.	Euclid	1.90
	Florida avenue.	Sixth	Seventh	5.68
	Eighteenth	Florida avenue	Columbia road	998.28
	First and Maryland avenue SW.			112.52
	L. SE., near Eighth.			4.62
	U. NW.	Ninth	Tenth	54.04
	M. NW.	Bridge	Thirty-first	52.23
	Do.	Thirty-first	Thirty-second	171.95
	Pennsylvania avenue and Fifth.			5.43
				3,506.21
Eckington and Soldiers' Home.	Fifth, NW.	G.	New York avenue	143.72
	G. NW.	Fifth	Ninth	92.49
	Do.	Tenth	Thirteenth	92.22
	First and E. NW.			5.11
	Sixth and G. NW.			5.36
	North Capitol	G.	I	6.84
	G. NW.	North Capitol	New Jersey avenue	4.87
	D. NE.	Maryland avenue	Ninth	434.05
	Fifth and I. NW., intersection.			2.71
	Fifth, NW.	G.	K	13.82
	G. NW.	Fifth to Eleventh	Seventh to Fifteenth	144.44
	Do.	Ninth	Eleventh	17.39
	Do.	Fifth	Seventh	74.94
	Fifth, NW.	G.	New York avenue	209.18
	Ninth and G, intersection.			3.54
				1,250.08

Street.	From—	To—	Kind of pavement.	Number of contract.	Square yards.	Price per yard.	Ordinary grading.	M
							<i>Cubic yards.</i>	g
W	Twelfth.....	Thirteenth	Asphalt, 6-inch base.....	2350	1,181.38	\$1.63		
Riggs	New Hampshire avenue.....	Nineteenth	do	2350	2,139.02	1.63		
T	Seventh.....	Ninth	do	2350	1,344.72	1.63		
Florida avenue.....	North Capitol	First	do	2350	5,417.82	1.63	3,660	
First	O	P	do	2350	1,063.18	1.63		
Florida avenue.....	Connecticut avenue.....	Eighteenth	do	2350	2,339.69	1.63		
U	Sixteenth.....	do	(Asphalt, 8-inch base.....	2350	543.26	1.83		
I	Twenty-third	New Hampshire avenue.....	(Asphalt, 6-inch base.....	2350	2,969.61	1.63	2,124	
			do	2350	2,045.95	1.63		

F	Seventh	Tenth	Asphalt block, gravel base.....	2335	3,972.78	\$1.77	887	
I	Third	Sixth	do	2335	4,850.13	1.77	1,833	
Third	H	I	Asphalt, 6-inch base.....	2350	1,193.59	1.63	457	

South Carolina avenue.....	Seventh	Ninth	Asphalt, 6-inch base.....	2350	1,345.65	\$1.63	440	
Tenth.....	G	I	Asphalt block	(c)	49	1.80	250	
Kentucky avenue.....	Lincoln Park.....	B	Gravel	2340	3,083.22	.13	2,351	
Thirteenth	East Capitol.....	D	do	2340	8,613.28	.12	5,833	
I	Eighth	Eleventh	Asphalt, 6-inch base.....	2350	3,213.85	1.63	1,490	
C	Eleventh	Twelfth	do	2350	1,632.86	1.63	531	
L	Fourth	Eighth	Gravel	2379	4,368.55	.10	7,535	
E	Thirteenth	East 519.66 feet	Asphalt, 6-inch base.....	2350	2,108.59	1.63	490	

M	Second	Florida avenue.....	(Asphalt, 6-inch base.....	2350	6,349.93	\$1.63	1,350	
B	Seventh	Ninth	Joint curb	(c)		.10		
P	North Capitol	Florida avenue.....	(Grading	2345		1.63	7,385	
D	Seventh	Ninth	Asphalt, 6-inch base.....	2350	964.33	1.63	275	
Florida avenue.....	Ninth	M	do	2340	2,212.02	1.63	2,620	
G	Maryland avenue.....	Fourteenth	Macadam	2340	5,323.94	.77	1,554	
F	Third	Eastward	Asphalt, 6-inch base.....	2350	482.03	1.63	210	
			do	2350	1,141.59	1.63	421	

M	Thirty-third	Thirty-sixth	Asphalt, 6-inch base.....	2350	3,826.14	\$1.63	1,556	
M, south side.....	Thirty-first	Thirty-second	do	2350	658.56	1.63	127	

a Sidewalks relaid by superintendent of streets.

TABLE A.—Schedule of street improvements, year ending June 30, 1897.

NORTHWEST.

From—	To—	Kind of pavement.	Number of contract.	Contract work.															Material.				Cost of material.	Cost of extra work.	Cost of inspection.	Removing sewer traps, water boxes, trees, lamp-posts, etc.	Amount of contract.	Total cost of street.
				Square yards.	Price per yard.	Ordinary grading.	Macadam grading.	Haul over 2,500 feet.	Old cobble, etc., re- moved.	Old curb removed.	Straight curb reset.	Circular curb reset.	Circular curb set.	Straight curb set.	Brick relaid.	Cobble gutters.	Vitrified block gutters.	Vitrified block.	Curb.									
																			8 by 8 inches, straight.	6 by 20 inches, straight.	Circular.							
						<i>Cubic yards.</i>	<i>Cubic yards.</i>		<i>Square yards.</i>	<i>Linear feet.</i>	<i>Linear feet.</i>	<i>Linear feet.</i>	<i>Linear feet.</i>	<i>Linear feet.</i>	<i>Square yards.</i>	<i>Square yards.</i>	<i>Square yards.</i>	<i>Number.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>							
Twelfth.....	Thirteenth.....	Asphalt, 6-inch base.....	2350	1,181.38	\$1.63			900										176.32	7,727	718			\$557.84	\$50.88	\$54.00	\$4.00	\$2,715.03	\$3,381.72
New Hampshire avenue.....	Nineteenth.....	do.....	2350	2,130.02	1.63		854.18			34.50								415.70	19,486	338.03			561.44	162.16	56.00		4,728.02	5,507.24
Seventh.....	Ninth.....	do.....	2350	1,346.72	1.63		383			974			9.30					209.58	9,073	926			683.49	138.39	28.00		3,109.85	3,959.79
North Capitol.....	First.....	do.....	2350	5,417.82	1.63	3,600	388			362	1,071	153.60			85.97	1,762.34	428.34	18,472	1,733.25			91.87	1,373.73	76.22	282.00	34.60	11,636.44	13,402.30
O.....	P.....	do.....	2350	1,003.18	1.63		116.70			45.17	40.58		9.45		9.33	664.65	154.54	5,917	652			9.42	477.36	20.45	24.00	17.00	2,132.75	2,671.10
Connecticut avenue.....	Eighteenth.....	do.....	2350	2,330.69	1.63		740.50	600	325	70				13.90	402.15	314.35	13,574	365.20			11.56	542.34	10.27	48.00			4,703.92	5,304.44
Sixteenth.....	do.....	Asphalt, 8-inch base.....	2350	543.26	1.83	2,124		1,500			15.70			112.97	2,355.07		621.96	28,244	2,359.50			112.46	1,879.87	153.94	152.00	209.83	8,256.63	10,742.26
Twenty-third.....	New Hampshire avenue.....	Asphalt, 6-inch base.....	2350	2,045.93	1.63			512			578	82.03	42.44		64.93	770.80		202.79	8,800	767.80			67.48	640.05	89.89	116.00		4,278.68	5,124.06

SOUTHWEST.

Seventh.....	Tenth.....	Asphalt block, gravel base.....	2335	3,972.78	\$1.77	887		2,200	4,086.78	340	2,107.65		47.10								47.07	\$38.60	\$319.45	\$110.00		\$8,220.45	\$9,688.60
Third.....	Sixth.....	do.....	2335	4,850.13	1.77	1,833		3,000	1,270	388	2,439.60	28.50										\$36.09	176.00			9,980.84	10,492.60
H.....	I.....	Asphalt, 6-inch base.....	2350	1,193.59	1.63	457		600	385	173	458	28.25		173			148.53	6,148				133.72	134.95	112.00		2,452.04	2,832.79

SOUTHEAST.

Seventh	Ninth	Asphalt, 6-inch base	2350	1,345.65	\$1.63	440		600	25	70	986.53			94.41	1,005		226.58	9,748				\$212.02	\$281.63	\$98.00	b \$203.89	\$2,787.81	\$3,553.38
G	I	Asphalt block	(c)	449	1.80	250			261	60	115			58						40.1	18.84	54.27	2.97	28.00		936.00	1,017.30
Lincoln Park	B	Gravel	2340	3,083.22	.13	2,351								630		672.02					417.45		74.00	b 124.66	902.98	1,519.00	
East Capitol	D	do	2340	8,613.28	.12	5,833					230		113.87	3,873.85	a 322	2,389.95					2,681.39	18.85	184.00	b 811.16	2,498.51	6,193.40	
Eighth	Eleventh	Asphalt, 6-inch base	2350	3,213.85	1.63	1,490			988	1,910	119.47			1,772.66			432.01	19,086	1,714.5		65.94	1,342.59	309.55	164.00	320.44	7,206.23	9,351.00
Eleventh	do	do	2350	1,632.86	1.63	631		1,900	30	375	57.28			596.68			145.26	6,166	597.3			447.69	16.62	40.00	34.01	2,383.35	2,921.00
Fourth	Eighteenth	Gravel	2379	4,368.55	.10	7,535								2,925.48		1,661.85				2,593.46	168.3	1,823.76	361.61	152.00	176.29	2,641.16	5,154.80
Thirteenth	East 519.66 feet	Asphalt, 6-inch base	2350	2,108.59	1.63	490	230		1,044	914			87.53	18.82			253.26						99.91	112.00	182.44	4,603.70	

NORTHEAST.

Second.....	Florida avenue.....	Asphalt, 6-inch base.....	2350	6,349.93	\$1.63	1,350			908	165	1,486.06			1,919.02			833.34	35,000		193.94		\$993.63	\$278.14	\$426.00	b \$846.32	\$12,510.48	\$16,788.00
		Joint curb.....	(c)		.10																					419.73	
		Grading.....	2337		.16	7,385			1,321																	1,313.70	
Seventh.....	Ninth.....	Asphalt, 6-inch base.....	2350	964.33	1.63	275	66			61.60	564.46						131.82	5,648				134.32	100.05	52.00	115.25	1,963.15	2,304.00
North Capitol.....	Florida avenue.....	do.....	2350	2,212.02	1.63	2,620	100			509.2	34.60			1,490.88		a 384						1,113.36	39.32	64.00	b 410.04	5,507.73	7,224.00
Seventh.....	Ninth.....	do.....	2350	1,375.25	1.63	633				20	130.20			1,109.10			235.37	11,532	1,107.35			971.04	59.36	50.00	99.26	3,077.64	4,257.00
Ninth.....	M.....	Macadam.....	2340	5,323.94	.77	1,554								1,078.67	a 2,022	980.91				1,038.2		751.18	723.02	140.00	b 447.24	4,726.74	6,788.00
Maryland avenue.....	Fourteenth.....	Asphalt, 6-inch base.....	2350	482.63	1.63	210			87								69.68	3,069				66.10	60.43	60.00		956.75	1,143.00
Third.....	Eastward.....	do.....	2350	1,141.50	1.63	421			329	18.90	711.15						166.43	7,091				154.23	154.55	32.00	40.98	2,342.37	2,724.00

GEORGETOWN.

Thirty-third.....	Thirty-sixth.....	Asphalt, 6-inch base.....	2350	3,896.14	\$1.63	1,350		2,000	6,026.33	163	2,219.22	35.85	37.70	21.55	a 1,937		580.19	25,144			37.68	\$601.19	\$673.18	\$312.00	b \$223.98	\$8,613.47	\$10,823.00
Thirty-first.....	Thirty-second.....	do.....	2350	658.56	1.63	157		800	762	37	431.10	15.80					103.37	4,531				98.55	186.60	62.00	b 177.68	1,401.16	1,923.00

a Sidewalks relaid by superintendent of streets.

b Includes cost of relaying sidewalks.

c Order of Commissioners.

TABLE A.—Schedule of street improvements, year ending June 30, 1897.

NORTHWEST.																					
Contract work.											Material.				Cost of material.	Cost of extra work.	Cost of inspection.	Removing sewer traps, water boxes, trees, lamp-posts, etc.	Amount of contract.	Total cost of street.	Name of contractor.
Haul over 2,500 feet.	Old cobble, etc., removed.	Old curb removed.	Straight curb reset.	Circular curb reset.	Circular curb set.	Straight curb set.	Brick relaid.	Cobble gutters.	Vitrified block gutters.	Vitrified block.	Curb.										
	Square yards.	Linear feet.	Linear feet.	Linear feet.	Linear feet.	Linear feet.	Square yards.	Square yards.	Square yards.	Number.	Feet.	Feet.	Feet.								
900	6	737	31.30	10	19.07	717.80			176.92	7,727	718		19	\$557.84	\$50.88	\$54.00	\$4.00	\$2,715.03	\$3,381.75	Barber Asphalt Paving Co.	
		34.50				376.15			415.70	19,486	338.03			561.44	162.16	56.00		4,728.02	5,507.62	Do.	
	362	974	46.70	9.30		973.97			209.58	9,073	926			683.49	138.39	28.00		3,109.85	3,959.73	Do.	
		1,071	153.60		85.97	1,762.34			428.34	18,472	1,733.25		91.87	1,373.73	76.22	282.00	34.60	11,636.44	13,402.99	Do.	
		45.17	40.58	9.45	9.33	664.65			154.54	5,917	652		9.42	477.36	20.45	24.00	17.00	2,132.75	2,671.56	Do.	
600	325	70			13.90	402.15			314.35	13,574	365.20		11.56	542.34	10.27	48.00		4,703.92	5,304.53	Do.	
1,500			15.70		112.97	2,355.07			621.96	28,244	2,359.50		112.46	1,879.87	153.94	152.00	299.83	8,256.63	10,742.27	Do.	
	578	842.03	42.44		64.93	770.80			202.79	8,800	767.80		67.48	640.05	89.89	116.00		4,278.68	5,124.62	Do.	
SOUTHWEST.																					
2,200	4,086.78	360	2,107.65		47.10								47.07	\$38.60	\$319.45	\$110.00		\$8,220.45	\$8,688.50	Washington Asphalt Block and Tile Co.	
3,000	1,270	388	2,439.60	28.50										336.09	176.00			9,980.84	10,492.93	Do.	
600	385	173	458	28.25	173				148.53	6,148				133.72	134.95	112.00		2,452.04	2,832.71	Barber Asphalt Paving Co.	
SOUTHEAST.																					
600	25	70	986.53			94.41	a 1,005		226.58	9,748			40.1	18.84	\$212.02	\$281.63	\$68.00	b \$203.89	\$2,787.81	\$3,553.35	Barber Asphalt Paving Co.
	261	60	115			58									54.27	2.97	28.00		936.00	1,017.24	Washington Asphalt Block and Tile Co.
					639	672.02		672.02							417.45		74.00	b 124.06	902.98	1,519.09	James Frawley.
			230		3,873.85	a 322	2,399.95					3,874	116.43	2,681.39	18.85	184.00	b 811.16	2,498.51	6,193.91	Do.	
	988	1,940	119.47	113.87	1,772.66			432.01	19,086	1,714.5			65.94	1,342.59	309.55	164.00	329.44	7,206.23	9,351.81	Barber Asphalt Paving Co.	
1,000	30	375	57.28		596.68			145.20	6,166	597.3				447.69	16.62	40.00	34.01	2,383.35	2,921.67	Do.	
					2,925.48		1,661.85			2,593.46	168.3			1,823.76	361.61	152.00	176.29	2,641.16	5,154.82	Washington Asphalt Block and Tile Co.	
	1,044	974		87.53	18.82	994.65		253.26							99.91	112.00	182.44	4,603.70		Barber Asphalt Paving Co.	
NORTHEAST																					
	908	165	1,486.06			1,919.02			833.34	35,000		193.94		\$993.63	\$278.14	\$426.00	b \$846.32	\$12,510.48	\$16,788.00	Barber Asphalt Paving Co.	
	1,321																	419.73		Fred Fritz.	
	20	61.60	564.46		61.60			131.82	5,648					134.32	100.05	52.00	115.25	1,963.15	2,304.77	Barber Asphalt Paving Co.	
	420	509.2	34.60		1,490.88	a 384		327.08	17,434	1,469.65		31.25		1,113.36	39.32	64.00	b 410.04	5,597.73	7,224.45	Do.	
	20	72	150.20		1,109.10			265.37	11,552	1,107.35				971.04	59.36	50.00	99.26	3,077.54	4,257.20	Do.	
					1,078.67	a 2,022	989.91				1,038.2	37.68		751.18	723.02	140.00	b 447.34	4,726.74	6,788.18	James Frawley.	
									89.08	3,039				66.10	60.43	60.00		956.75	1,143.28	Barber Asphalt Paving Co.	
	329	18.00	711.15					166.43	7,091					154.23	154.55	32.00	40.98	2,342.37	2,724.13	Do.	
GEORGETOWN.																					
2,000	6,026.33	163	2,219.22	35.85	37.70	21.55	a 1,937		580.19	25,144			37.68	\$601.19	\$673.18	\$312.00	b \$623.98	\$8,613.47	\$10,823.82	Barber Asphalt Paving Co.	
800	762	37	431.10	15.80					103.37	4,531				98.55	186.69	62.00	b 177.68	1,401.16	1,926.08	Do.	

b Includes cost of relaying sidewalks.

c Order of Commissioners.



TABLE C.—Work done at cost of railroad companies, etc.—Continued.

Company.	Street.	From—	To—	Amount.
Anacostia and Potomac River.	Four-and-a-half and Missouri avenue.	-----	-----	\$3.13
	C, SW., intersection Second and Canal.	-----	-----	194.30
	Second, SW.	C-----	Virginia avenue-----	22.65
	Second and H, SW.	-----	-----	2.47
	-----	-----	-----	<u>222.55</u>
Georgetown and Tennallytown. Metropolitan	M-----	Thirty-first-----	Thirty-second-----	13.82
	Fifth, NW	D-----	F-----	13.51
	East Capitol, south side.	Seventh-----	Eighth-----	5.06
	Connecticut avenue, westside, and square between S and Florida avenue.	-----	-----	55.01
	Twenty-first and Connecticut avenue.	-----	-----	-----
	Seventeenth, NW	H-----	K-----	14.25
	H, NW	Fourteenth-----	Fifteenth-----	6.59
	Four-and-a-half and Missouri avenue NW.	-----	-----	4.94
	Louisiana avenue NW.	Third-----	Fifth-----	6.10
	H, NW	Fifteenth-----	Vermont avenue-----	1,092.66
	P, NW	Twenty-second-----	213.6 feet west of bridge.	420.34
	F, NW	Twelfth-----	Thirteenth-----	.84
	Connecticut avenue.	Q-----	R-----	419.20
	Fourteenth, NW	F-----	New York avenue-----	9.31
	Do.	do-----	do-----	6.12
	Thirty-sixth and Prospect avenue, NW.	-----	-----	1.27
	Ninth and Pennsylvania avenue, NW.	-----	-----	2.15
	First, E	East Capitol-----	B, N-----	382.95
	Lincoln Park, north side, intersection Twelfth, NE.	-----	-----	2.45
	Ninth and U, NW	-----	-----	7.07
	Ninth, east side.	F-----	G-----	165.68
	Florida avenue, intersection Connecticut avenue.	-----	-----	12.09
	Connecticut avenue.	M-----	Dupont Circle-----	1.24
	-----	-----	-----	<u>2,628.83</u>
Belt Line	First and F, NW., intersection.	-----	-----	5.60
	Fourth, NW	G-----	New York avenue-----	24.89
	G, NW	New Jersey avenue-----	Fourth-----	8.32
	O, NW	Fourth-----	Eleventh-----	17.07
	Eleventh	G-----	K-----	44.56
	Eleventh and F, NW., intersection.	-----	-----	1.24
	Fourteenth and Pennsylvania avenue, NW., intersection.	-----	-----	43.64
	New Jersey avenue.	O-----	P-----	14.50
	O	Fourth-----	Eleventh-----	7.60
	-----	-----	-----	<u>167.42</u>
Columbia	Fourth and Massachusetts avenue.	-----	-----	1.16
	New York avenue.	Thirteenth-----	Fourteenth-----	9.10
	Tenth and New York avenue, NW.	-----	-----	4.45
	-----	-----	-----	<u>14.71</u>

TABLE F.—Statement of character and extent of street pavements July 1, 1897.

NORTHWEST.

Locality.	Carriageway.										Resurfaced: originally paved with—
	Length.	Width.	Asphalt.	Coal tar and concrete.	Granite.	Cobble and blue rock.	Macadam.	Asphalt block.	Gravel and unimproved.	Year paved.	Year resurfaced.
North Capitol street, from B (west side) to C.....	Feet. 480	50	Sq. yds. 1,385	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	1883	
North Capitol street, from C (west side) to D.....	400	50	—	—	—	—	—	—	1,050	1883	
North Capitol street, from D (west side) to E.....	400	50	—	—	1,198	—	—	—	—	1883	
North Capitol street, from E (west side) to Massachusetts avenue.....	400	50	—	1,028	—	—	—	—	—	1889	
North Capitol street, from Massachusetts avenue (west side) to I street.....	1,390	50	3,728	—	—	—	—	—	—	1887	
North Capitol street, from I (west side) to K.....	440	50	1,443	—	—	—	—	—	—	1889	
North Capitol street, from K (west side) to M.....	1,130	50	3,103	—	—	—	—	—	—	1882	
North Capitol street, from M (west side) to New York avenue.....	500	50	1,103	—	—	—	—	—	—	1883	
North Capitol street, from New York avenue (west side) to O street.....	445	50	852	—	—	—	—	—	—	1883	
North Capitol street, from O to Florida avenue.....	720	50	—	—	—	—	—	—	1,233	1886	
Arthur street, between New Jersey avenue and First, B and C streets.....	470	25	—	—	—	—	—	1,366	—	1883	
First street, from center of Botanical Garden to Pennsylvania avenue.....	440	—	2,270	—	—	—	—	—	—	1883	1895
First street, from Pennsylvania avenue to F street.....	2,240	{ 50 }	—	—	7,215	—	α 527	500	—	{ 1892 1879 }	
First street, from F to H.....	620	32	—	—	1,427	—	—	—	—	1882	
First street, from H to DeFrees.....	170	32	—	700	—	—	—	—	—	1877	
First street, from DeFrees to I.....	150	32	—	—	535	—	—	—	—	1882	
First street, from I to K.....	380	32	1,191	—	—	—	—	—	—	1880	
First street, from K to Pierce.....	685	32	1,951	—	—	—	—	—	—	1884	
First street, from Pierce to Florida avenue.....	2,944	32	6,158	—	—	—	—	—	7,791	1897	
Second street, from Pennsylvania avenue to Indiana.....	800	40	—	—	3,683	—	—	—	—	1891	
Second street, from Indiana avenue to I street.....	2,900	40	10,452	—	—	—	—	—	—	1891	
Kirby street, between First and Third, M and N.....	480	32	—	—	—	—	—	—	1,760	1881	
Third street, from center of Botanical Garden to Pennsylvania avenue.....	500	—	—	—	—	2,230	—	—	—	—	

β Paved from O to P.

α Vitrified brick.

TABLE F.—Statement of character and extent of street pavements July 1, 1897.—Continued.
NORTHWEST—Continued.

Locality.	Carriageway.												Year resurfaced.	Year paved.	Gravel and un-improved.	Asphalt block.	Macadam.	Cobble and blue rock.	Granite.	Coal tar and concrete.	Asphalt.	Width.	Length.	Resurfaced: originally paved with—			
	Feet.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.															
Third street, from Pennsylvania avenue to D street	1,130	32	436	4,231								1880													Coal tar.		
Third street, from intersection of D		32										1880														{ 1883 1884 }	
Third street, from Indiana avenue to L street	3,260	40	16,359									1875															Do.
Third street, from Indiana avenue to New York avenue	500	40	2,685									1875															
Third street, from New York avenue to P street	450	35	4,177									1883													Do.		
Third street, from P to Florida avenue	1,207	35																								Do.	
Fourth street, from Indiana avenue to New York avenue.	3,610	32	3,573	10,719								1872															Do.
Fourth street, from New York avenue to M street	230	32										1873															
Fourth street, from M to New Jersey avenue	1,170			2,401								1891													Do.		
Fourth street, from New Jersey avenue to Florida avenue.	1,530	30	5,564									1891														Do.	
Fourth and-a-half street, from center of Mall to Pennsylvania avenue.	720	55										1886															Do.
Fourth and-a-half street, from Pennsylvania avenue to D street.	700	50										1889															
Fifth street, from D to G	1,240	46	3,341									1885													{ 1887 1887 1873 }		
Fifth street, from G to New York avenue	930	32										1885														Do.	
Fifth street, from New York avenue to O street	1,620	32	5,663									1879															Do.
Fifth street, from O to Florida avenue	830	32	3,123									1889															
Fifth street, from Florida avenue to Missouri avenue	1,340	32	4,436									1889													Do.		
Sixth street, from center of Mall to Missouri avenue	670	60										3,333														Do.	
Sixth street, from Missouri avenue to Louisiana avenue	830	60	5,078									1885															Do.
Sixth street, from Louisiana avenue to E street	530	32	791									1877															
Sixth street, from E to F	470	32	1,313									1878													Surface asphalt binder.		
Sixth street, from F to G	250	32		975								1889														Surface asphalt binder.	
Sixth street, from G to New York avenue	1,700	35										1887															Surface asphalt binder.
Sixth street, from New York avenue to Florida avenue	4,240	35	16,636									1880															
Madison street, between Sixth and Seventh, M and N	540	25	1,538									1889													Surface asphalt binder.		

Do.
Asphalt.
Surface asphalt binder.

TABLE F.—Statement of character and extent of street pavements July 1, 1897—Continued.

NORTHWEST—Continued.

Locality.	Carriageway.										Resurfaced; originally paved with—
	Length.	Width.	Asphalt.	Coal tar and concrete.	Granite.	Cobble and blue rock.	Macadam.	Asphalt block.	Gravel and unimproved.	Year paved.		Year resurfaced.
	Feet.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.		
Eighteenth street, from river to D.....	840	32	1,544						5,473	1892	
Eighteenth street, from D to E.....	390	32		1,066						1873	1878
Eighteenth street, from E to New York avenue.....	290	32	4,885							1881	
Eighteenth street, from New York avenue to Pennsylvania avenue.....	1,170	32	4,515							1872	1882
Eighteenth street, from Pennsylvania avenue to K street.....	920	32									
Eighteenth street, from K to L.....	400	32						1,431		1886	
Eighteenth street, from L to P.....	1,950	32	7,048	576						1873	1879 1878 1897
Eighteenth street, from P to Q.....	500	32		1,764						1897	
Eighteenth street, from Q to S.....	850	32	3,130							1891	
Eighteenth street, from S to Florida avenue.....	940	32	3,823						3,644	1893	
Nineteenth street, from river to E.....	1,180	32				1,028					
Nineteenth street, from E to New York avenue.....	1,225	32									
Nineteenth street, from New York avenue to Pennsylvania avenue.....	1,370	32		6,421						1873	1878
Nineteenth street, from Pennsylvania avenue to K street.....	655	32			3,170					1880	
Nineteenth street, from K to M.....	1,010	32			3,726					1885	
Nineteenth street, from M to N.....	520	32			1,894					1882	
Nineteenth street, from N to Dupont Circle.....	570	32	2,469							1881	1895
Nineteenth street, from Dupont Circle to Florida avenue.....	2,000	32	2,841	4,757						1873	1891
Twentieth street, from river to E street.....	1,450	32							3,682		
Twentieth street, from E to Pennsylvania avenue.....	1,580	32		5,579						1873	1878
Twentieth street, from Pennsylvania avenue to I street.....	1,580	32	981							1879	
Twentieth street, from I to K.....	375	32		1,350						1879	
Twentieth street, from K to P.....	2,425	32	3,939	2,268						1873	1894 1895 1880
Twentieth street from P to Connecticut avenue.....	315	32	2,167							1873	

Twentieth street, from R to S	568	32	1,965					1880		
Twentieth street, from S to Florida avenue	690	32	949					1872		
Hopkins street, between Twentieth and Twenty-first, O and P	350	32						1893		
Twenty-first street, from river to E street	1,500	32								
Twenty-first street, from E to Pennsylvania avenue	1,830	32		6,101	1,304			1873	1878	Do.
Twenty-first street, from Pennsylvania avenue to K street	380	32						1875		
Twenty-first street, from K to Q	2,770	32	10,802					1875	1891	Do.
Twenty-first street, from Q to Hillier	270	32					0.956			
Twenty-first street, from Hillier to R	250	32		988				1884		
Twenty-first street, from R to Florida avenue	450	32	1,483					1887		
Twenty-second street, from Virginia avenue	1,565	32						1890		
Twenty-second street, from river to Virginia avenue	200	32								
Twenty-second street, from Virginia avenue to F street	300	32								
Twenty-second street, from F to G	315	32	1,407					1872		
Twenty-second street, from G to Pennsylvania avenue	1,625	32		4,641				1883	1873	Do.
Twenty-second street, from Pennsylvania avenue to M street	1,000	32	2,852					1885	1894	
Twenty-second street, from M to O	1,150	32	3,894					1890		
Twenty-second street, from O to P	230	32	1,586					1889		
Twenty-second street, from P to Florida avenue	450	32	2,069					1895		
Twenty-third street, from Upper Water to E	1,670	32								
Twenty-third street, from E to Virginia avenue	1,050	32						3,413		
Twenty-third street, from Virginia avenue to I street	1,050	32						1,778		
Twenty-third street, from I to Pennsylvania avenue	400	32	1,425					1874		
Twenty-third street, from Pennsylvania avenue to M street	720	32					2,387	1891		
Twenty-third street, from M to Rock Creek	950	32						1886		
Twenty-fourth street, from E to G	730	32								
Twenty-fourth street, from G to Pennsylvania avenue	1,378	32						1873		
Twenty-fourth street, from Pennsylvania avenue to M street	660	32						1872		
Twenty-fourth street, from M to Rock Creek	1,160	32								
Twenty-fifth street, from river to Virginia avenue	1,700	32								
Twenty-fifth street, from Virginia avenue to K street	1,100	32						1890		
Twenty-fifth street, from K to Pennsylvania avenue	330	32	1,163				2,727	1890		
Twenty-fifth street, from Pennsylvania avenue to M street	530	32	1,668					1890		
Twenty-fifth street, from M to Rock Creek	1,140	32								
Twenty-sixth street, from river to G street	1,320	32						3,747		
Twenty-sixth street, from G to K	1,400	32						2,599		
Twenty-sixth street, from K to Pennsylvania avenue	470	32						1874		
Twenty-sixth street, from Pennsylvania avenue to M street	350	32		919				1882		
Twenty-sixth street, from M to Rock Creek	220	32						1887		
Twenty-sixth street, from E to L street (R. C.)	2,750	32								
Twenty-sixth street, from Rock Creek to K street	600	35						800		
B street, from North Capitol to First	820	35						8,651		
B street, from First to Third	810	35						1,066		
B street, from Third to Seventh	500	56						1873		
B street, from Seventh to Twelfth	1,690	101						1880		
								1890		
								1873		

a Permit work.

F street, from New Jersey avenue to Fourth street	1,180	35	4,382				1879	1882	Asphalt.
F street, from Fifth to Seventh	800	35	2,350	1,152			1878	1889	Asphalt (south side).
Do.	760	35					1877		
F street, from Seventh to Ninth	540	51	1,913				1877	{ 1891 } 1879	Do.
F street, from Ninth to Twelfth	1,100	60	1,578	4,257			1877	{ 1891 } 1891	Coal tar
F street, from Twelfth to Thirteenth	400	60	890	1,213			1877	{ 1891 } 1891	Do.
F street, from Thirteenth to Fifteenth	1,080	60	6,467				1883	1882	Do.
F street, from Seventeenth to Eighteenth	630	40	2,856				1881		Do.
F street, from Eighteenth to Twenty-second	1,950	40	4,048	4,571			1873	{ 1878 } 1897	Do.
Elbridge street, from Twentieth to Twenty-first	470	20				1,033	1894		
F street, from Twenty-second to Virginia avenue	534	40	2,330				1894		
F street, from Virginia avenue to New Hampshire avenue	{ 400 } 800	35		1,711		62,964	1894		
F street, from New Hampshire avenue to Twenty-seventh street	350	35				2,272			
G street, from North Capitol to New Jersey avenue	900	35		3,802			1887		
G street, from New Jersey avenue to Seventh street	2,620	35	3,700	6,873			{ 1894 } 1878 1879 1889	Do.	
G street, from Seventh to Ninth	550	40	2,514				1872	{ 1878 } 1889 1890	Do.
G street, from Ninth to Fifteenth	2,670	50	8,141	6,008			1895	{ 1878 } 1889 1890 1893	Do.
G street, from Seventeenth to Twenty-second	7,600	36	3,043	6,633			1872	{ 1867 } 1873	Do.
G street, from Twenty-second to Twenty-seventh	2,080	36			9,511		1873	{ 1867 } 1873	
Washington street, between G and H, Fourth and Fifth	480	35	2,128				1875	{ 1867 } 1875	
Grant place, between G and H, Ninth and Tenth streets	530	24	1,435				1890	{ 1867 } 1890	
H street, from North Capitol to First	775	56	4,262				1879	{ 1867 } 1890	
H street, from First to Fourth	1,025	56			4,838		1879	{ 1867 } 1890	
H street, from Fourth to Seventh	1,500	35		6,381			1879	{ 1867 } 1890	
H street, from Seventh to Thirteenth	2,300	35	9,067				1872	{ 1867 } 1890	
H street, from Thirteenth to Fourteenth	530	40	2,114				1872	{ 1867 } 1890	
H street, from Fourteenth to Fifteenth	430	56	3,423				1874	{ 1867 } 1890	Do.
H street, from Fifteenth to Vermont avenue	360	56	5,423				1874	{ 1867 } 1890	Do.
H street, from Vermont avenue to Connecticut avenue	1,120	50	2,889				1884	{ 1867 } 1890	Asphalt block.
H street, from Connecticut avenue to Nineteenth street	1,425	50	5,451				1884	{ 1867 } 1890	Coal tar.
H street, from Nineteenth to Twenty-second	1,900	32	6,493				1872	{ 1867 } 1890	
H street, from Twenty-second to Twenty-sixth	1,520	36		4,150			1875	{ 1867 } 1890	
H street, from Twenty-sixth to Twenty-seventh	375	32		1,066			1886	{ 1867 } 1890	
Defress street, between North Capitol and First, H and I	840	22				c1,967			
I street, from North Capitol to New Jersey avenue	1,150	35		4,557			1884		
I street, from New Jersey avenue to Fifth street	1,560	35	5,804				1880		
I street, from Fifth to H	1,000	32	4,210				1885		
I street, from Eighth to Ninth	250	32	759				1879		
I street, from Ninth to Tenth	580	32	2,090						

c Permit work.

b Tenth to Fourteenth widened 10 feet.

a Vitrified brick.

TABLE F.—Statement of character and extent of street pavements July 1, 1897.—Continued.
NORTHWEST—Continued.

Locality.	Carriageway.										Resurfaced: originally paved with—
	Length.	Width.	Asphalt.	Coal tar and concrete.	Granite.	Cobble and blue rock.	Macadam.	Asphalt block.	Gravel and unimproved.	Year paved.	Year resurfaced.
	<i>Feet.</i>	<i>Feet.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>		
I street, from Tenth to Eleventh.....	340	32	714							1886	1878
I street, from Eleventh to Thirteenth.....	670	40	3,700							1872	1878
I street, from Thirteenth to Fifteenth.....	1,260	40	4,632							1874	{1894 1875}
I street, from Fifteenth to Seventeenth.....	1,030	48	8,322							1873	
I street, from Seventeenth to Eighteenth.....	640	40	2,672							1880	
I street, from Pennsylvania avenue to Twenty-third street.....	1,450	38	6,266							1891	Macadamized.
I street, from Twenty-third to Twenty-seventh.....	1,020	40	2,249				5,287			{1897 1886}	
I street, from Eighteenth to Pennsylvania avenue.....	1,300	40	5,327							1886	
K street, from North Capitol to First.....	371	50			4,838					1874	Cobble.
K street, from First to Third.....	750	50	3,984							1894	
K street, from Third to Seventh.....	1,820	50	4,175	4,249						1874	Coal tar.
K street, from Seventh to Ninth.....	1,460	{53 39}	9,315							1873	Do.
K street, from intersection of Vermont avenue.....			717							1894	Do.
K street, from Ninth to Eighteenth.....	4,990	50	7,405	20,146						{1889 1883 1896}	Do.
K street, from Eighteenth to Twenty-third.....	2,160	50	11,671							1875	
K street, from Twenty-third to Twenty-eighth.....	1,810			619						1880	
L street, from North Capitol to New Jersey avenue.....	1,400	32	4,643	12,671						1874	
L street, from New Jersey avenue to Fourth street.....	1,550	32		1,592						1890	
L street, from Fourth to Fifth.....	750	32		2,665						1877	
L street, from Fifth to Sixth.....	240	32								1877	
L street, from Sixth to Seventh.....	4,040	32	21,293							1877	
L street, from Connecticut avenue to Twentieth street.....	1,300	32	2,645							1883	Do.
L street, from Sixth to Eighth.....	380	32		1,628						1873	
L street, from Seventeenth to Connecticut avenue.....	2,345	32	8,141							1883	
L street, from Twentieth to Twenty-fifth.....	2,210	32	483							1889	

L street, from Twenty-sixth to Twenty-seventh.....	335	32	1,175	2,463	1889	1889	
DeSales street, between L and M, Seventeenth and Connecticut avenue.....	550	40	5,535		1889	1889	
Pierce street, between L and M, New Jersey avenue and North Capitol street.....	1,540	40			1889	1889	
M street, from North Capitol to First.....	870	35	3,067		1894	1894	
M street, from First to New Jersey avenue.....	720	35	2,597		1890	1890	
M street, from New Jersey avenue to Sixth street.....	1,400	35	5,504		1880	1880	
M street, from Sixth to Fourteenth.....	1,830	35	13,147		1879	1879	1894
M street, from Fourteenth to Sixteenth.....	1,100	40	4,573		1881	1881	1894
M street, from Sixteenth to Eighteenth.....	1,460	40	4,532	1,319	1873	1873	1878
M street, from Eighteenth to New Hampshire avenue.....	1,570	40	6,084		1875	1875	1880
M street, from New Hampshire avenue to Rock Creek.....	2,125	40	9,171		1882	1882	1886
Jefferson street, between M and N, Eighteenth and Nineteenth.....	450	27		a1,303	1884	1884	
Ridge street, between M and N, Fourth and Fifth.....	760	30	2,518		1879	1879	
Ward place, between New Hampshire avenue and Twenty-second street, M and N.....	545	30	1,505		1882	1882	
N street, from North Capitol to New Jersey avenue.....	1,600	32	5,642		1883	1883	
N street, from New Jersey avenue to Fifth street.....	1,890	32	3,311		1890	1890	
N street, from Fifth to Ninth.....	1,300	32	4,454		1883	1883	
N street, from Ninth to Fourteenth.....	2,190	32	6,862		1880	1880	
N street, from Fourteenth to Sixteenth.....	910	32	3,249		1881	1881	
N street, from Sixteenth to New Hampshire avenue.....	2,245	32	2,781	3,775	1873	1873	1884
N street, from New Hampshire avenue to Twenty-first street.....	260	32	517		1875	1875	1878
N street, from Twenty-first to Twenty-second.....	620	32	2,681		1883	1883	
N street, from Twenty-second to Twenty-fourth.....	710	32	2,196		1882	1882	
N street, from Twenty-fourth to Rock Creek.....	810	32		2,394	1885	1885	
Sunderland place, between N and O, Nineteenth and Twentieth streets.....	380	30		a1,185	1885	1885	
Morgan street, between M and N, First and Third.....	380	30	1,307		1892	1892	
O street, from North Capitol to New Jersey avenue.....	1,830	32			1875	1875	1881
O street, from New Jersey avenue to Thirtieth street.....	3,250	32	4,756	8,905	1883	1883	
O street, from Thirtieth to Vermont avenue.....	130	32	431		1873	1873	
O street, from Fifteenth to Sixteenth.....	520	32	1,663		1883	1883	
O street, from Sixteenth to Seventeenth.....	520	32	1,667		1887	1887	
O street, from Twentieth to Twenty-first.....	600	32	2,011		1889	1889	
O street, from Twenty-first to Twenty-second.....	400	32	2,368		1891	1891	
P street, from Twenty-second to Rock Creek.....	290	32		663	1884	1884	
P street, from North Capitol to Fourth.....	1,970	32	7,135		1884	1884	
P street, from Fourth to Ninth.....	2,030	32	5,166		1884	1884	
P street, from Ninth to Fifteenth.....	2,590	32	8,156	500	1884	1884	
P street, from Fifteenth to Eighteenth.....	1,500	32	8,076		1873	1873	1878
P street, from Eighteenth to Twentieth.....	450	32	1,265		1870	1870	
P street, from Twentieth to Twenty-second.....	1,120	40	3,481		1885	1885	
P street, from Twenty-second to Rock Creek.....	300	40	1,079		1887	1887	1881

a Permit work.

Coal tar.

Do.

Do.

Do.

Do.
Asphalt.

TABLE F.—Statement of character and extent of street pavements July 1, 1897.—Continued.

Locality.	Carriageway.										Resurfaced; originally paved with—
	Length.	Width.	Asphalt.	Coal tar and concrete.	Granite.	Cobble and blue rock.	Macadam.	Asphalt block.	Gravel and improved.	Year paved.	Year resurfaced.
	Feet.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.		
Madison street, between Seventeenth and Eighteenth, P and Q.	870	25	2,251							1893	1892
Sixteenth street, between Fourteenth and Fifteenth, P and Q.	690	24	1,753							1890	
Franklin street, between P and Q, New Jersey avenue and Fifth.	630	30							1,697		
Bates street, between P and Q, North Capitol and First.	840	25							1,800		
Madison street, between P and Q, Fifteenth and Seventeenth.	1,040	25		2,674						1875	
Q street, from Florida avenue to Third.	1,470	32							6,151		
Q street, from Third to New Jersey avenue.	420	32	1,812							1890	
Q street, from New Jersey avenue to Fifth.	560	32	2,031							1888	
Q street, from Fifth to Sixth.	270	32	833							1890	
Q street, from Sixth to Rhode Island avenue.	1,460	32	2,104							1887	1895
Q street, from Rhode Island avenue to Vermont avenue.	900	32	2,655							1889	
Q street, from Vermont avenue to Fourteenth.	850	32	2,840							1883	
Q street, from Fourteenth to Sixteenth.	1,250	32	2,338	2,408						1874	1886 1891
Q street, from Sixteenth to Seventeenth.	530	32	1,800							1875	1889
Q street, from Seventeenth to Nineteenth.	1,400	32	4,504							1888	1895
Q street, from Nineteenth to Twentieth.	380	32		842						1873	1882
Q street, from Twentieth to Twenty-second.	970	32		2,541						1886	
Q street, from Twenty-first to Massachusetts avenue.	80	32		883						1875	
Hilmyer street, between Q and R, Twentieth and Twenty-first.	470	27						a1,552		1884	
Warner street, between New Jersey avenue and Fifth, Q and R.	470	25							1,333		
Corcoran street, between Thirteenth and Fourteenth, Q and R.	554	30	2,067							1887	1895
Corcoran street, between Fourteenth and Fifteenth, Q and R.	630	30		2,129						1875	

[illegible]

a Permit work.

TABLE F.—Statement of character and extent of street pavements July 1, 1897—Continued.

NORTHWEST—Continued.

Locality.	Carriageway.										Resurfaced: originally paved with—
	Length.	Width.	Asphalt.	Coal tar and concrete.	Granite.	Cobble and blue rock.	Macadam.	Asphalt block.	Gravel and improved.	Year paved.	Year resurfaced.
Caroline street, between T and U, to Fifteenth and Sixteenth.	Feet. 520	24	Sq. yds. 1,325	.....	.....	.....	.....	.....	.....	1881	.....
William street, between T and U, to Thirteenth and Fourteenth.	610	30	.....	.....	.....	.....	.....	2,075	.....	1886	.....
U street, from Ninth to Tenth.	570	32	2,301	.....	.....	.....	.....	.....	.....	1891	.....
U street, from Tenth to Fourteenth.	1,590	45	4,808	.....	.....	.....	.....	.....	.....	1893	.....
U street, from Fourteenth to Sixteenth.	1,150	45	3,310	.....	.....	.....	.....	.....	.....	1891	.....
U street, from Sixteenth to Florida avenue.	1,397	45	4,125	.....	.....	.....	.....	.....	.....	1897	.....
Seaton street, between U and V, to Seventeenth and Eighteenth.	590	20	.....	.....	.....	.....	.....	1,822	.....	.....	.....
V street, from Vermont avenue to Thirteenth street.	1,348	32	4,543	.....	.....	.....	.....	4,211	.....	1894	.....
V street, from Thirteenth to Fifteenth.	1,357	32	.....	.....	.....	.....	.....	.....	.....	.....	.....
V street, from Fifteenth street to Florida avenue.	1,345	32	.....	.....	.....	.....	.....	.....	.....	1897	.....
W street, from Florida avenue to Florida avenue.	2,470	32	61,358	.....	.....	.....	.....	5,853	.....	1895	.....
Connecticut avenue, intersection of Florida avenue.	.....	.....	140	.....	.....	.....	.....	.....	.....	.....	.....
Connecticut avenue, from H street to Florida avenue.	4,000	50	15,719	20,527	.....	.....	.....	.....	.....	1873	.....
Florida avenue, from Q street to R.	415	46	2,612	.....	.....	.....	.....	.....	.....	1885	.....
Florida avenue, from R street to Connecticut avenue.	397	46	2,064	.....	.....	.....	1,876	.....	.....	1885	.....
Intersection of Connecticut avenue and S street.	.....	.....	.....	.....	.....	.....	.....	.....	.....	1885	.....
Florida avenue, from Connecticut avenue to Eighteenth street.	1,500	46	5,080	.....	.....	.....	.....	.....	.....	1897	.....
Florida avenue, from Eighteenth street to Ninth.	7,074	.....	.....	.....	.....	.....	39,315	.....	.....	1875	.....
Florida avenue, from Ninth street to Seventh.	650	45	.....	.....	2,394	.....	.....	.....	.....	1874	.....
Florida avenue, from Seventh street to New Jersey avenue.	1,250	46	7,298	.....	.....	.....	.....	.....	.....	1874	.....
Florida avenue, from New Jersey avenue to Fourth street.	900	46	3,405	.....	.....	.....	.....	.....	.....	1888	.....
Florida avenue, from Fourth street to First.	1,320	46	.....	.....	.....	.....	6,563	.....	.....	1890	.....
Florida avenue, from First street to North Capitol.	950	46	5,846	.....	.....	.....	.....	.....	.....	1896	.....

Coal tar.

1878
1884
1886
1887

	1,650	35	8,330	0.343	1887
Indiana avenue, from First street to Third street.	1,650	35	8,330	0.343	1887
Louisiana avenue, from Third street to Seventh street.	1,290	50	4,654	1.137	1881
Louisiana avenue, from Eighth street to Ninth street.	390				1873
Louisiana avenue, from intersection to Seventh street and C street.	570	78 1/2		3.214	1880
Massachusetts avenue, from Ninth street to Tenth street.	890	50	5,143	4.765	1872
New Jersey avenue, from North Capitol street to Third street.	890	50	3,858		1884
Massachusetts avenue, from Third street to Seventh street.	2,000	50	3,121	785	1882
Massachusetts avenue, from Fourth street to Seventh street.	1,670	50	3,108		1881
Massachusetts avenue, from Ninth street to Thirteenth street.	1,650	50	9,450		1883
Massachusetts avenue, from Thirteenth to Fourteenth street.	550	50	2,491		1880
Massachusetts avenue, around Thomas Circle street.	816	50	6,000		1877
Massachusetts avenue, from Fourteenth to Twentieth street.	3,290	50	12,547	1.351	1883
Massachusetts avenue, around Scott Square.	565				1873
Massachusetts avenue, from Twentieth street to Florida avenue.		50	12,540	5,817	1877
Massachusetts avenue, intersection of Fourth street and Highland Terrace, from Fourteenth to Fifteenth street.		50	742		1875
Missouri avenue, from Third to Four-and-a-half street.	690	50	498		1877
Missouri avenue, from Four-and-a-half to Sixth street.	674	35	1,248		1873
New Hampshire avenue, from Four-and-a-half to Sixth street.	650	35		2,562	1884
New Hampshire avenue, from Twenty-seventh to G street.	900	50		1.081	1872
New Hampshire avenue, from G street to Pennsylvania avenue.	1,630	50		5,000	1884
New Hampshire avenue, from Pennsylvania avenue to M street.	980	50	6,992	7,997	
New Hampshire avenue, from M to P street.	1,750	50			1879
New Hampshire avenue, from P to Q street.	650	50	10,047		1882
New Hampshire avenue, from Q to R street.	650	50	2,538		1885
New Hampshire avenue, from R to T street.	1,340	50	4,164		1888
New Hampshire avenue, from T to V street.	1,100	50	8,809		1889
New Hampshire avenue, from V street to Florida avenue.	500	50	6,805		1890
New Hampshire avenue, around Dupont Circle.	1,350			2,688	
New Jersey avenue, from B to C street.	570	50	2,446		1873
New Jersey avenue, from C to D street.	400	50	1,655		1877
New Jersey avenue, from C to D street.	400	50	1,235		1883
New Jersey avenue, from D to L street.	2,350	50	21,463	1.177	1877
New Jersey avenue, from L street to New York avenue.	600	50			1882
New Jersey avenue, from New York avenue to Florida avenue.	3,420	50	11,400		1884

b Paved, Seventh to Ninth

a Permit work.

Asphalt.
South side asphalt;
north side coal tar.

Coal tar.

Do.

Do.
Coal tar (west side).

Do.

TABLE F.—Statement of character and extent of street pavements July 1, 1897—Continued.

NORTHWEST—Continued.

Locality.	Carriageway.										Year resurfaced.	Year paved.	Resurfaced: originally paved with—
	Length.	Width.	Asphalt.	Coal tar and concrete.	Granite.	Cobble and blue rock.	Macadam.	Asphalt block.	Gravel and unimproved.				
	Feet.		Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.				
New York avenue, from New Jersey avenue to North Capitol street.	1,720	50	3,604							1890			
New York avenue, from New Jersey avenue to Seventh street.	2,150	50	9,229							1889		{ 1878 } { 1895 }	
New York avenue, from Ninth to Fifteenth street.	4,520	50	12,500	9,817						1872		{ 1875 } { 1887 }	
New York avenue, from Fourteenth to Fifteenth street.	450	85	1,244	619						1872		{ 1885 }	
New York avenue, from Thirteenth to Fourteenth street.	600	50	2,170							1891		{ 1885 }	
New York avenue, from Seventeenth to Eighteenth street.	630	50		3,500						1873		Asphalt.	
New York avenue, from Eighteenth to Nineteenth street.	1,980	50							11,388				
New York avenue, from Nineteenth to Twenty-third street.	1,630	60				11,355				{ 1872 } 1874		Do.	
Ohio avenue, from Twelfth to Fifteenth street.	2,250	108½	25,322							1887		Do.	
Pennsylvania avenue, from First to Sixth street.	4,120	108½	53,199							{ 1876 } 1877		Do.	
Pennsylvania avenue, from Sixth to Fifteenth street.	2,340	85	17,017							1871		Coal tar.	
Pennsylvania avenue, from Fifteenth to Eighteenth street.	2,370	80	10,078	5,555						1875		Coal tar (north and south side).	
Pennsylvania avenue, from Eighteenth to Twenty-third street.		80	9,752	11,398						1875			
Pennsylvania avenue, from Eighteenth to Twenty-third street.	1,500	80	12,753							1877		Coal tar.	
Rock Creek.	1,256		6,083							1880			
Pennsylvania avenue, around Washington Circle.										1883		Do.	
Rhode Island avenue, from Connecticut avenue to Scott Circle.	1,280	50	4,701	710						1873			

SOUTHWEST.

Rhode Island avenue, from Scott Circle to Thirteenth street	1,680	50	7,723				1881	
Rhode Island avenue, from Thirteenth to Ninth street	1,240		9,210				1882	
Rhode Island avenue, from Ninth to Fifth street	1,340		8,120				1883	
Rhode Island avenue, from Fifth street to New Jersey avenue	320	50	2,313				1888	
Rhode Island avenue, from New Jersey to Florida avenue	220	50				2,313		
Virginia avenue, from B to E street	2,050	50				11,400	1895	
Virginia avenue, from E to G street	1,350	50	8,724				1896	
Virginia avenue, from G to Rock Creek	2,000					10,153	1872	1880
Vermont avenue, from H to I street	400	50	4,156					1878 { 1878 1872 } 1884
Vermont avenue, from K to M street	1,000	50	6,537				1872	1883
Vermont avenue, from M to P street	1,240	50	6,150	190			1873	
Vermont avenue, from P to R street	980	50	6,103				1881	
Vermont avenue, from R to T street	980	50			4,853			
Vermont avenue, from T street to Florida avenue	980	50				6,424		
South Capitol street, from B (west side) to Canal	1,450	50						
South Capitol street, from Canal (west side) to H	1,050	50			2,827		1894	
South Capitol street, from H (west side) to M	1,340	50						
South Capitol street, from M (west side) to N	690				1,623			
South Capitol street, from N (west side) to river	2,340							
Half street, from Virginia avenue to river	5,400	32				6,106		
Augusta street, between Half to First, R to S	5,420	32				18,444		
First street, from center Botanical Garden to Maryland avenue	400	53	2,270				1873	
First street, from Maryland avenue to Virginia avenue	2,020	35			6,722		1873	
First street, from Virginia avenue to M street	2,240	35			11,108		1876	
First street, from M to N	2,700	32						
First street, from N to river	3,700	32			2,314			
Second street, from Maryland avenue to G street	550	45	2,224			13,160		
Second street, from G to F	1,200	32					1892	
Second street, from F to L	1,500	32	5,680				1892	
Second street, from L to river	4,100	32			5,886		1880	
Third street, from center Botanical Garden to B	1,300	40			3,835	11,913	1881	
Third street, from B to Virginia avenue	1,300	40	5,890				1884	
Third street, from Virginia avenue to F street	1,480	40	2,088				1885	
Third street, from F to H	700	40	2,947				1895	
Third street, from H to P	2,728	40						
Four-and-a-half street, from center of Mall to Maine land avenue	2,450	55	1,143			9,803	1885	
Four-and-a-half street, from Maine avenue to Maryland avenue	420	55	4,823				1890	

Do.

Do.

Do.

TABLE F. Statement of character and extent of street improvements July 1, 1897—Continued.

Locality.	Length.	Width.	Carriage-way.							Year paved.	Year resurfaced.	Resurfaced: originally paved with—
			Asphalt.	Coal tar and concrete.	Granite.	Cobble and blue rock.	Macadam.	Asphalt block.	Travel and improved.			
	Feet.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.			
Four-and-a-half street, from Maryland avenue to H street.	2,450	55			12,851					1882		
Four-and-a-half street, from H to P.	3,070	55			14,586					1880		
Union street, from Four-and-a-half to Sixth, between M and O.	1,250	40				5,333						
Sixth street, from center of Mall to C street.	1,250	65				5,067				1873		
Sixth street, from C to river.	4,530	40			18,749			1,548				
Six-and-a-half street, from Sixth to Seventh, between D and E street, from center of Mall to Water street.	550	48										
Seventh street, from center of Mall to Water street.	5,200	51			10,820					1877		
Eighth street, from B to C.	400	55	1,434							1880		
Eighth street, from C to E.	410	55	3,035							1883		
Eighth street, from E to H.	1,047	55	3,574							1885		
Eighth street, from H to Water.	683	52						2,332				
Ninth street, from B to C.	420	52	1,458							1889		
Ninth street, from C to D.	520	52				655						
Ninth street, from D to Water.	2,100	52			7,061					1883		
Tenth street, from B to Maryland avenue.	1,730	52					2,411			1886		
Tenth street, from Maryland avenue to river.	1,500	52			5,000							
Eleventh street, from B to river.	1,950	40			10,511					1873		
Eleventh street, from river to center of Mall to B street.	1,870	40			8,444					1872		
Twelfth street, from B to Maryland avenue.	760	40	5,705		3,735					1873		
Thirteenth street, from B to Maryland avenue.	1,180	40								1876		
Thirteenth street, from Maryland avenue to Water street.	470	40						2,088				
Thirteen-and-a-half street, from B to D.	870	32								1895		
Thirteen-and-a-half street, from D to Maryland avenue.	380	32			1,275		3,016			1875		
Thirteen-and-a-half street, from Maryland avenue to river.	250	32						900				
Fourteenth street, from center of Mall to B street.	600	40										
Fourteenth street, from B to Maryland avenue.	1,420	40			3,029					1893		
Fifteenth street, from B to river.	1,020	32			6,574							
B street, from South Capitol to First.	840	35			4,486				2,625	1873		

TABLE F.—Statement of character and extent of street pavements July 1, 1897—Continued.
SOUTHWEST—Continued.

Locality.	Length.	Width.	Carriageway.										Resurfaced: originally paved with—
			Asphalt.	Coal tar and com- crete.	Granite.	Cobble and blue rock.	Macadam.	Asphalt block.	(Gravel and im- proved.	Year paved.	Year resurfaced.		
	<i>Feet.</i>		<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>			
McLean street, N and O, Third and Four-and-a-half O street, from South Capitol to Water	620	30							62 127	8,530	1887		
P street, from South Capitol to Four-and-a-half Q street, from South Capitol to Canal	2,710	32								6,945			
R street, from South Capitol to Canal	3,310	30								4,967			
S street, from South Capitol to Canal	1,340	30								4,900			
T street, from South Capitol to Canal	1,300	30								4,900			
U street, from Half to Canal	1,200	30								3,620			
V street, from Eastern Branch to Canal	1,200	30								3,633			
Canal street, from Eastern Branch to Canal	600	30								2,000			
Canal street, from B to C	600	(6)							1,881		1894		
Canal street, from C to E	2,650				5,186					11,706	1891		
Water street, from P to Sixth	640	50			3,000						1876		
Water street, from Sixth to Seventh	1,500	50			8,000						1884		
Water street, from Seventh to Twelfth	2,400	50			14,000						1872		
Delaware avenue, from B to G	800	50			4,500						1880		
Delaware avenue, from G to K	2,000	50			2,056								
Delaware avenue, from K to P	713	50							4,116	14,772	1895		
Maine avenue, from Third to Sixth	1,227	35											
Maryland avenue, from First to Third	1,750	60	3,384			4,635					1872		
Maryland avenue, from Third to Seventh	1,820	60									1883		
Maryland avenue, from Ninth to Water	4,700	60			29,050	12,843					1873		
Virginia avenue, from South Capitol to Four-and-a-half Virginia avenue, from Fourth and a-half to Seventh	2,400									13,580	1875		
Virginia avenue, from Fourth and a-half to Seventh	1,170				1,722								
Virginia avenue, from Ninth to Twelfth	1,320				3,836								
Georgia avenue, from South Capitol to Canal	1,800	50								8,888	1881		
SOUTHEAST.													
South Capitol street, from B (east half) to Canal	1,450	50											
South Capitol street, from Canal to H	1,050	50			2,827					3,419	1894		
South Capitol street, from H to M	1,300	50								3,594			

TABLE F.—Statement of character and extent of street pavements July 1, 1897—Continued.
SOUTHEAST—Continued.

Locality.	Length.	Width.	Carrage-way.						Year resurfaced.	Year paved.	Asphalt block.	Asphalt.	Asphalt.	Do.	Resurfaced: originally paved with—
			Asphalt.	Coal tar and concrete.	Granite.	Cobble and blue rock.	Macadam.	Asphalt block.							
	<i>Feet.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	
Eleventh street, from C to Pennsylvania avenue.....	1,298	48			15,451			1,006		1893					
Eleventh street, from Pennsylvania avenue to bridge.....	3,990	40			4,367					1889					
Eleventh street, from M to East Capitol to B.....	1,700	56								1882					
Twelfth street, from Lincoln Square to river.....	5,640	35													
Thirteenth street, from Lincoln Square to D.....	2,163	35													
Thirteenth street, from East Capitol to D.....	800	35													
Thirteenth street, from D to Pennsylvania avenue.....	2,450	35					2,638								
Thirteenth street, from Pennsylvania avenue to river.....	2,450	35													
Fourteenth street, from East Capitol to river.....	4,700	45													
Fifteenth street, from East Capitol to river.....	4,500	45													
Sixteenth street, from East Capitol to Kentucky avenue.....	3,300	35													
Seventeenth street, from East Capitol to river.....	3,300	35													
Eighteenth street, from East Capitol to Congressional Cemetery.....	2,300	35													
Nineteenth street, from East Capitol to Congressional Cemetery.....	2,300	35													
Twentieth street, from East Capitol to B.....	700	35													
Twenty-first street, from East Capitol to B.....	700	35													
Twenty-second street, from East Capitol to B.....	700	35													
Twenty-third street, from East Capitol to B.....	700	35													
East Capitol street, from First (south) to Fourth.....	1,500	50	2,736												
East Capitol street, from Fourth (south) to Fifth.....	1,900	50	5,028												
East Capitol street, from Fifth to Eleventh (south half).....	600	50	1,786												
East Capitol street, from Eleventh to Lincoln Square.....	4,280	50													
Branch (south half).....															
A street, from Second to Third.....	440	35	1,724												
A street, from Third to Sixth.....	950	35													
A street, from Sixth to Seventh.....	600	35													
A street, from Seventh to Ninth.....	800	35													
A street, from Massachusetts avenue to Eastern Branch.....	4,000	35													
A street (south side) to Lincoln Square.....	850	35													
B street, from South Capitol to New Jersey avenue.....	390	45			370		4,398								

Coal tar.

	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891
B street, from New Jersey avenue to Second street ^a	1,390	35	8,903																
B street, from Second to Third.....	1,390	35	3,810																
B street, from Fifth street to North Carolina avenue.....	870	35																	
B street, from North Carolina avenue to Eleventh street.....	1,340	35		3,514															
B street, from Eleventh to Nineteenth.....	3,600	35																	
B street, from Nineteenth street to Eastern Branch.....	1,400	25																	
Carroll street, between B and C, First and Second.....	650	24	1,416																
C street, from South Capitol to New Jersey avenue.....	340	32	948																
C street, from New Jersey avenue to Fourth street.....	1,400	32																	
C street, from Fourth to Sixth.....	320	32																	
C street, from Sixth to Seventh.....	600	32																	
C street, from Seventh to Eighth.....	600	32																	
C street, from Eighth to Ninth.....	1,340	32																	
C street, from Ninth to Tenth.....	1,340	32																	
C street, from Tenth to Eleventh.....	4,000	32																	
D street, from Eleventh to Nineteenth.....	4,450	32																	
D street, from Eleventh street to Eastern Branch.....	4,450	32	1,178																
D street, from First to Third.....	970	35	3,274																
D street, from Third to Sixth.....	980	35																	
D street, from Sixth to Seventh.....	580	35																	
D street, from Seventh street to Pennsylvania avenue.....	1,000	35	1,800																
D street, from Pennsylvania avenue to Nineteenth street.....	4,550	35																	
D street, from Second to (south side) Third.....	370	35	1,454																
Ivy street, from D and E to New Jersey avenue and South Capitol.....	530	31																	
E street, from South Capitol to Third.....	1,900	35																	
E street, from Third street to Pennsylvania avenue.....	2,950	35																	
E street, from Pennsylvania avenue to Thirteenth street.....	720	35	4,511																
E street, from Thirteenth to Nineteenth.....	3,200	35	2,113																
G street, from Third to Eleventh.....	2,950	36																	
G street, from Eleventh to Pennsylvania avenue.....	850	36																	
G street, from Pennsylvania avenue to Seventeenth street.....	1,875	36																	
I street, from South Capitol to Second.....	1,500	35																	
I street, from Second to Third.....	400	35																	
I street, from Third to Eighth.....	1,820	35																	
I street, from Eighth to Georgia avenue.....	1,800	35	3,645																
K street, from South Capitol to Eastern Branch.....	7,600	35																	
L street, from South Capitol to Eastern Branch.....	7,600	35																	
Van street, between New Jersey avenue and First, M and N.....	7,550	25																	
M street, from South Capitol to Fourth.....	2,400	35																	
M street, from Fourth to Eastern Branch.....	4,000		8,944																
Quander street, between M and N, New Jersey avenue and First.....	4,440	25	8,454																
N street, from South Capitol to Third.....	2,030	35																	
N street, from Third to Twelfth.....	1,600	35	4,057																
O street, from South Capitol to Eastern Branch.....	1,400	35																	
Walter street, between B and C, Twelfth and Thirteenth.....	7,510	30																	

^a Widened, First to Second streets.

TABLE F.—Statement of character and extent of street pavements July 1, 1897—Continued.

SOUTHEAST—Continued.

Locality.	Length.	Width.	Carriageway.						Year resurfaced.	Resurfaced: originally paved with—
			Asphalt.	Coal tar and concrete.	Granite.	Cobble and blue rock.	Macadam.	Asphalt block.		
	Feet.	Feet.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.		
Georgia avenue, from South Capitol to Nineteenth street	7,500	50						42,010		
Kentucky avenue, from Lincoln Square to Eastern Branch	4,350	50						24,445		
Massachusetts avenue, from Thirtieth to Nineteenth street	3,000	50						19,500	1879	
New Jersey avenue, from B to E street	1,000	50							1878	
New Jersey avenue, intersection of B street	700	50			8,776					
New Jersey avenue, from Canal to M street	700	50			665					
New Jersey avenue, from M to N street	1,400	50				6,808				
North Carolina avenue, from First to Third street	970	50						3,112		
North Carolina avenue, from Third to Sixth street	1,400	50						7,300		
North Carolina avenue, from Sixth to Eighth street	1,100	50						5,033	1890	
North Carolina avenue, from Eighth to Eleventh street	1,100	50						6,480	1891	
Pennsylvania avenue, intersection of Second street	1,900	(a)	2,028						1892	
Pennsylvania avenue, from Second to Fourth street	3,600	(a)	4,458						1879	
Pennsylvania avenue, from Fourth to Sixth street	1,400	(a)	14,775						1876	
Pennsylvania avenue, from Sixth to Seventh street	1,400	(a)	6,126						1879	
Pennsylvania avenue, from Eighth to Eleventh street	1,100	(a)	5,320						1883	
Pennsylvania avenue, from Eleventh to Bridge street	1,000	(a)	5,400						1888	
Pennsylvania avenue, from Bridge to Sixth street	6,800	(a)					20,147		1880	
South Carolina avenue, from Second to Sixth street	800	50						9,430		Coal tar.
South Carolina avenue, from Sixth to Seventh street	700	50						3,288	1891	Asphalt (south side).
South Carolina avenue, from Seventh to Ninth street	700	29	1,572						1896	Asphalt (north side).
South Carolina avenue, from Ninth street to Massachusetts avenue	3,200	50						17,777		
Virginia avenue, from Second to Third street	300	50					2,354		1889	
Virginia avenue, from Third to Eleventh street	3,010	50						10,000		
Virginia avenue, from Eleventh street to Eastern Branch	1,800	50						9,000		

	400	22	a 1.949		1.500	1892	
Chief street, between Thirteenth and Fourteenth. F and Maryland avenue.	769	20					
Emerson street, between Thirteenth and Fourteenth. B and F.	3,730	35			14,791		
Fourteenth and a half street, between Fourteenth and Fifteenth. D and North Carolina avenue.	420						
Florence court, between Fourteenth and Fifteenth. F and G.	530	25			1,500		
Fifteenth street, from East Capitol to Florida avenue.	3,600	35			12,196		
Sixteenth street, from East Capitol to C.	1,250	35			4,196		
Seventeenth street, from East Capitol to C.	1,250	35			4,196		
Eighteenth street, from East Capitol to C.	1,250	35			4,196		
Nineteenth street, from East Capitol to C.	1,250	35			4,196		
Twentieth street, from East Capitol to C.	1,250	35			4,196		
Twenty-first street, from East Capitol to C.	1,250	35			4,196		
Twenty-second street, from East Capitol to C.	1,250	35			4,196		
Twenty-third street, from East Capitol to C.	1,250	35			4,196		
Twenty-fourth street, from East Capitol to C.	1,250	35			4,196		
Twenty-fifth street, from B to C.	440	35			1,711		
East Capitol street, from First (north half) to Fourth.	1,456	50	2,797			1879	Asphalt.
East Capitol street, from Fourth (north half) to Ninth.	1,950	50	3,417			1879	Do.
East Capitol street, from Ninth (north half) to Eleventh.	650	50	1,786			1883	
East Capitol street, from Lincoln Square to Eastern Branch (north half).	4,400	50			12,941		
A street, from First to Second.	640	35	2,788			1880	
A street, from Second to Fourth.	820	35	2,972			1884	
A street, from Fourth to Seventh.	1,050	35		4,206		1887	
A street, from Seventh to Ninth.	750	35			2,300	1890	
A street, from Ninth to North Carolina avenue to Eastern Branch.	4,200	35			17,111		
A street, north side of Lincoln Square.	850		4,077			1894	Macadam.
B street, from North Capitol street to Delaware avenue.	220	46		1,533		1895	
B street, from Delaware avenue to First.	700	46	4,411			1890	Coal tar.
B street, from First to Second.	640	40		3,068		1873	
B street, from Second to Third.	700	35	2,556			1874	
B street, from Third to Sixth.	300	35	2,016			1884	
B street, from Sixth to Massachusetts avenue.	300			2,250		1885	
B street, from Massachusetts avenue to Eastern Branch.	6,800	35	1,066		23,414	1887	
Park street, between B and C, Eleventh and Twelfth.	330	30			1,110	1896	
C street, from North Capitol to Delaware avenue.	420	46		1,107		1879	
C street, from Delaware avenue to First.	500	38		2,081		1890	
C street, from First to Third.	1,000	38		4,191		1882	
C street, from Third to Fourth.	400	32		1,545		1884	
C street, from Fourth to Sixth.	1,120	35			4,468	1884	
C street, from Sixth to Eighth.	950	32			3,986	1888	
C street, from Eighth to Tenth.	700	32			2,180	1891	

a Permit work.

TABLE F.—Statement of character and extent of street pavements July 1, 1897—Continued.

NORTHEAST—Continued.

Locality.	Carriageway.										Resurfaced; originally paved with—
	Length.	Width.	Asphalt.	Coal tar and concrete.	Granite.	Cobble and blue rock.	Macadam.	Asphalt block.	Gravel and improved.	Year paved.	Year resurfaced.
C street, from Tenth to Eastern Branch.	Feet. 6,280	32							Sq. yds. 19,135		
D street, from North Capitol to Delaware avenue.	340	32							1,920	1893	
D street, from Delaware avenue to Massachusetts avenue.	1,200	32	4,117								
D street, from Massachusetts avenue to Maryland avenue.	1,450	32					5,446			1889	
D street, from Maryland avenue to Fifteenth.	3,500	35	1,641						14,422	1897	
E street, from North Capitol to First.	840	35			2,913					1893	
E street, from First to Fourth.	1,432	35					5,640			1893	
F street, from First to Second.	640	35	21,635						15,439	1891	
California street, between E and F, First and Second.	2,000	35	8,355						17,803	1888	
F street, from North Capitol to Third.	4,642	35							2,285		
F street, from Third to Fifteenth.	576	30							2,000	1890	
Chicago street, between F and G, First and Second.	561	30	2,348						6,151	1891	
Morris street, between F and G, Sixth and Seventh.	840	35					2,350			1891	
G street, from North Capitol to First.	1,800	35							10,380	1897	
G street, from First to Sixth.	1,561	35	552								
G street, from Sixth to Seventh.	3,696	40									
G street, from Seventh to Fifteenth.	750	20			1,738						
Jackson street, between G and H, North Capitol and First.	450	30							1,151		
James street, between G and H, Twelfth and Thirteenth.	850	56	4,190							1893	1891
H street, from North Capitol to First.	6,320	56	14,124							1893	1893
H street, from First to Fifteenth.	56	56	13,662							1890	1893
Do.	450	24	3,295						1,360	1889	
Wythe street, between H and I, Twelfth and Thirteenth.	1,780	35							7,531	1889	
I street, from North Capitol to First.	561	35					1,779			1889	
I street, from First to Sixth.	2,387	35							8,058	1889	
I street, from Sixth to Seventh.	850	20	1,426								
I street, from Seventh to Florida avenue.											
Myrtle street, between North Capitol and First, I and K.											

Asphalt.
Asphalt (north side).
Asphalt (south side).

K street, from North Capitol to First.	850	50	4,408				23,436	1889
K street, from First to Florida avenue.	3,520	50					2,220	
Penton street, between North Capitol and First, K and L.	850	24						
Galini street, between K and L, Sixth and Seventh.	501	35					1,267	
L street, from North Capitol to Florida avenue.	850	25					13,134	
Ol Forsyth street, between North Capitol and First, L and M.	850	25					2,220	
Bulcock street, between L and M, North Capitol and First.	850	25						
Riley street, between Land M, North Capitol and First	850	25					2,220	1894
M street, from North Capitol to Second	1,468	32	5,486					
M street, from Second to Florida avenue	1,730	32	7,183					1896
Patterson street, between M and N, North Capitol and Second.	1,430	25					6,045	
Morton place, between Sixth and Seventh streets, M and L.	850	25					2,100	
N street, from North Capitol to Florida avenue.	2,270	35					7,300	
Decatur street, between P and O, North Capitol and First.	747	25					1,245	
Orleans street, between L and M, Sixth and Seventh.	561	30					2,100	
O street, from North Capitol to Florida avenue.	1,250	35					4,622	1896
P street, from North Capitol to Florida avenue.	700	32	2,539					1879
Delaware avenue, from B to C street.	500	50		2,056				
Delaware avenue, from C street to Florida avenue.	5,300	50					27,112	
Florida avenue, from North Capitol to New York avenue.	1,300	46					6,644	
Florida avenue, from New York avenue to Brentwood road.	700					3,040		1895
Florida avenue, from New York avenue to Ninth street.	3,140	46				6,314	10,065	1897
Florida avenue, from Ninth to Fifteenth street.	3,000	46				17,005		1892
Maryland avenue, from First to Fourth street.	1,650	60				11,535		1887
Maryland avenue, from Sixth to Eleventh street.	2,170	60				14,951		1889
Maryland avenue, from Eleventh to Thirteenth street.	1,070	60				8,269		1890
Maryland avenue, from Thirteenth to Fifteenth street.	1,040	60				9,635		1891
Maryland avenue, from intersection of fifteenth street.	280	60		2,527				1889
Massachusetts avenue, from North Capitol to First street.	950	50	4,069					1892
Massachusetts avenue, from First to Second street.	720	51						1893
Massachusetts avenue, from Second to Fourth street.	700		6,001			3,961		1895
Massachusetts avenue, from Sixth to Eighth street.	1,090	50				6,749		
Massachusetts avenue, from Eighth to Eleventh street.	980	50				6,385		1895
New York avenue, from North Capitol street to Florida avenue.	1,370	50	5,363					1891
North Carolina avenue, from Lincoln Square to C street.	2,060	50					11,110	
Tennessee avenue, from Lincoln Square to Fifteenth street.	2,060	50					17,222	

b Second to Seventh street.

a Permit work.

TABLE F.—Statement of character and extent of street pavements July 1, 1897—Continued.

GEORGETOWN.

Locality.	Carriageway.										Resurfaced; originally paved with—
	Length.	Width.	Asphalt.	Coal tar and concrete.	Granite.	Cobble and blue rock.	Macadam.	Asphalt block.	Gravel and unimproved.	Year paved.	
	<i>Feet.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>	<i>Sq. yds.</i>		
Water street, from Rock Creek to Aqueduct.	3,440	50	---	---	18,421	---	---	---	---	1875	---
South Water street, between Water and M.	420	---	---	---	---	---	---	---	---	---	---
First and Thirty-third streets, from Potomac to Thirty-second street.	670	20	---	---	---	1,228	---	---	---	1873	Coal tar.
Twenty-eighth to Thirty-first street.	1,700	50	---	7,887	4,451	---	---	---	---	1875	---
M street, from Twenty-eighth to Thirty-sixth street.	2,340	50	7,771	---	---	---	---	---	---	1875	---
M street, from Thirty-first to Thirty-eighth street.	340	50	---	---	---	---	1,720	---	---	1877	---
M street, from Thirty-seventh to Thirty-eighth street.	340	44	---	---	---	---	---	---	1,566	1872	---
Olive street, from Rock Creek to Twenty-eighth street.	480	30	---	---	---	1,946	---	---	---	1891	---
Olive street, from Twenty-eighth to Thirtieth street.	480	30	2,780	---	---	---	---	---	---	1891	---
Prospect street, from Twenty-second to Thirty-third street.	850	30	2,918	---	---	---	---	---	---	1890	---
Prospect street, from Thirty-third to Thirty-fifth street.	370	30	866	---	---	---	---	---	---	1891	---
Prospect street, from Thirty-fifth to Thirty-sixth street.	370	30	---	---	---	---	---	---	2,089	---	---
P street, from Thirty-sixth to Thirty-eighth street.	300	30	---	---	---	---	---	---	870	---	---
P street, from Thirty-eighth to Thirty-ninth street.	300	30	---	---	---	---	---	---	---	1874	---
N street, from Rock Creek to Twenty-seventh street.	320	30	---	---	---	959	---	---	---	1882	Surfaced on asphalt block.
N street, from Twenty-seventh to Twenty-eighth street.	320	30	---	---	---	---	---	---	---	1882	---
N street, from Twenty-eighth to Thirtieth street.	540	30	1,604	---	---	---	---	---	---	1886	---
N street, from Thirtieth to Thirty-second street.	1,100	30	3,525	---	---	---	---	---	---	---	---
N street, from Thirty-second to Thirty-fifth street.	1,640	30	5,889	---	---	---	---	---	---	1880	---
N street, from Thirty-fifth to Thirty-sixth street.	450	30	1,081	---	---	---	---	---	---	1891	---
N street, from Thirty-sixth to Thirty-eighth street.	480	30	---	---	---	---	---	---	2,089	---	---
O street, from Rock Creek to Twenty-eighth street.	980	30	---	---	---	---	---	---	2,847	---	---
O street, from Twenty-eighth to Twenty-ninth street.	300	30	890	---	---	---	---	---	---	1890	---
O street, from Twenty-ninth to Thirtieth street.	300	30	4,829	---	---	---	---	---	---	1885	---
O street, from Thirtieth to Thirty-first street.	1,500	30	---	---	4,455	---	---	---	---	1885	---
O street, from Thirty-first to Thirty-fifth street.	1,500	30	---	2,398	---	---	---	---	---	1879	Coal tar.
O street, from Thirty-fifth to college gate.	730	30	---	---	---	---	---	---	---	---	---
Dumbarton avenue, from Rock Creek to Twenty-seventh street.	450	30	---	---	1,250	---	---	---	---	---	---
Dumbarton avenue, from Twenty-seventh to Twenty-eighth street.	375	30	---	---	---	---	---	---	1,500	---	---
Dumbarton avenue, from Twenty-eighth to Thirty-second street.	1,760	30	---	3,609	---	---	---	---	---	1887	---

P street, from 300 feet west of bridge.	340	30	1,500	6,809			1879
P street, from Rock Creek to Twenty-eighth street.	1,000	30		2,062			1879
P street, from Twenty-eighth to Thirty-second	2,000	30		1,969			1879
P street, from Thirty-second to Thirty-fifth	1,370	30		3,624			1884
P street, from Thirty-fifth to Thirty-seventh	480	30				2,084	
Bank street, between M and Prospect, to Thirty-third and Thirty-fourth	250						
Aqueduct street, from M street to bridge	230						
Mill street, from P to North	600	30	1,500				
North street, from P to Mill	400	30					
Q street, from Twenty-eighth to Thirtieth	550	30	2,000			1,500	
Q street, from Thirtieth to Valley	1,200	30		3,943			1889
Q street, from Valley to Thirty-second	300	30		1,067			1887
Q street, from Thirty-second to Thirty-fifth	1,280	30	4,002				1891
R street, from Thirty-second to Thirty-fifth	1,000	30				3,365	
R street, from Thirty-second to Thirty-fifth	750	30				2,577	
S street, from Thirty-second to Thirty-fifth	1,750	30				2,567	
T street, from Twenty-eighth to Thirty-first	1,720	30				6,750	
U street, from Thirty-first to Thirty-second	1,800	30	4,227				1895
U street, from Thirty-second to Thirty-fifth	600	30	1,552				1894
Cambridge place, Irvin place, and Avon place in Cooke	1,410	25	4,008				1893
Twenty-seventh street, from M to P	1,420	30				4,750	
Twenty-eighth street, from Rock Creek to M street.	1,400	30					
Twenty-eighth street, from M to P	1,420	30	4,428				1872
Twenty-eighth street, from P to Q	600	30	1,474				1890
Twenty-eighth street, from Q to U	690	30				3,116	
Twenty-ninth street, from Water to M	550	30			2,919		
Twenty-ninth street, from M to N	550	30		1,885			1874
Twenty-ninth street, from N to P	850	30	2,969				1882
Twenty-ninth street, from P to Q	370	30	1,361				1883
Twenty-ninth street, from Q to U	700	30				4,610	1890
Thirtieth street, from Water to M	860	30			2,732		
Thirtieth street, from M to N	550	30		2,121			1875
Thirtieth street, from N to P	840	30	2,632				1879
Thirtieth street, from P to Q	370	30	1,282				1883
Thirtieth street, from Q to U	700	30		2,746			1888
Jefferson street, between Thirtieth and Thirty-first, to Water and M.	890	30			2,889		1883
Thirty-first street, from K to Canal	550	30			1,883		1874
Thirty-first street, from Canal to M	340	30		1,209			1887
Thirty-first street, from M to N	520	30		1,742			1890
Thirty-first street, from N to P	850	30	2,937				1882
Thirty-first street, from P to U	940	30	1,832	3,285			1889
Valley street, between Thirty-first and Thirty-second, to M and O	550					3,849	1885
Thirty-second street, from Water to M	1,500	30			3,540		
Thirty-second street, from M to P	800	30		6,763			1879
Thirty-second street, from P to U	1,400	30			6,416		1894
Potomac street, from Canal to M	1,630	30			1,071		1875

Cobble.

Asphalt block.

Do.

a Permit work.

TABLE F.—Statement of character and extent of street pavements July 1, 1897—Continued.

GEORGETOWN—Continued.

Locality.	Carriageway.										Resurfaced; originally paved with—
	Length.	Width.	Asphalt.	Coal tar and concrete.	Granite.	Cobble and blue rock.	Macadam.	Asphalt block.	Gravel and unimproved.	Year paved.	Year resurfaced.
Potomac street, from M to Prospect.	Feet. 320	30			Sq. yds. 380			Sq. yds.	Sq. yds.	1879	
Potomac street, from Prospect to O.	600	30	1,840							1884	
Potomac street, from M to Prospect.	320	30			664					1884	
Thirty-third street, from M to N.	550	30	1,580						1,660	1890	
Thirty-third street, from N to P.	620	30	2,050							1883	
Thirty-third street, from P to Thirty-second	1,300	30	4,075							1890	
Thirty-fourth street, from Water to M.	350	30							1,065	1890	
Thirty-fourth street, from M to N.	550	30	1,690							1890	
Thirty-fourth street, from N to P.	600	30	2,109							1892	
Thirty-fourth street, from P to R.	680	30	2,295							1891	
Thirty-fourth street, from R to Thirty-second	1,800	30				6,570			660		
Thirty-fifth street, from Water to M.	270	30				975					
Thirty-fifth street, from M to Prospect.	250	35	1,017							1890	
Thirty-fifth street, from Prospect to N.	270	35	2,920							1889	
Thirty-fifth street, from N to P.	400	35	1,558							1887	
Thirty-fifth street, from P to Q.	320	35	5,749							1890	
Thirty-fifth street, from Q to R.	1,400	35	6,000							1891	
Thirty-fifth street, from R to Tenley road.	1,400	35							800		
Thirty-fifth street, from M to Prospect.	290	30								1891	
Thirty-sixth street, from M to Prospect.	670	30	2,368								
Thirty-sixth street, from O to Q.	650	30							2,200		
Thirty-seventh street, from M to Q.	1,650	30							4,167		
High (Thirty-second) street, from Thirty-fifth to Tenley road.	2,121	-----			6,076					1893	

SUBURBAN (NORTHWEST).

First street extended, from R to S.	447	35	01,898							1892	
First street extended, from Florida avenue to R to S to T.	625	35				2,575				1891	

Le Droit avenue, from Florida avenue to Maple street, from end of pavement to Maple avenue	1,055	35	a 4,419				1892
Linden street, from Florida avenue northward	425	35	a 1,571				1892
Linden street, from end of pavement to Maple avenue	425	35	571				1892
Larch street, from Florida avenue to Maple	425	32	1,516				1890
March street, from Maple avenue to Spruce street	191	32	731				1891
Maple avenue, from Florida avenue to Linden street	810	32	3,227				1890
Maple avenue, from Florida street to Le Droit avenue	986	32	3,680				1891
Pomeroy street, from Fifth street	754	30	2,500				1891
Brightwood avenue, from Florida avenue to Pomeroy street		50		783			1890
Brightwood avenue, from Florida avenue northward		50		5,222			1891
Brightwood avenue, from Grant street to Irving	4,490	56		6,205			1889
Brightwood avenue, from Irving street to Steuben		56		2,749			1891
Brightwood avenue, from Irving street northward		56		3,040			1893
Fourteenth street extended, from Florida avenue to Yale street		56	7,395				1889
Fourteenth street extended, from Yale street northward	3,650	56	3,725				1891
Fourteenth street extended, from end of pavement northward		56	4,307				1892
Fourteenth street, Kenyon to Whitney avenue	200	56	486				1894
Eighteenth street, Florida avenue to Columbia road	2,040	30	4,634				1894
Clifton street, from Fourteenth street extended eastward	665	30	2,221				1891
Stoughton street, from Fourteenth street extended to Fifteenth	700	30	1,100	755		a 483	1889
Chapin street, from Fourteenth to Columbia road	857	30	1,702	674		a 483	1892
Welling place, from Fourteenth street to University place	529	30	a 1,781				1892
Euclid place, from Fourteenth street to University place	500	30	1,666				1891
Eighteenth street, from Florida avenue to Columbia	2,040	32	a 7,879				1891
California street, from Eighteenth to Nineteenth	646	30	a 2,153				1891
First street, from S to W	1,900	35	7,386				1895
Twenty-second street, from Massachusetts avenue to R	400	32	2,128				1895
Streets in Meridian Hill	1,050	20				2,580	1896
Le Roy place	320	30	1,700				1896
Phelps place, Le Roy place to California avenue	323	32	1,604				1896
Connecticut avenue extended	(19,169)	50	a 2,195			70,228	1891
Champlain avenue	1,900					6,693	1894
Linden street, from Maple avenue to Pomeroy street	1,184	35				4,672	1891
Linden street, from Pomeroy to College	740	28				2,537	1891
Steuben street, from Brightwood avenue to Sherman street	786	30				2,712	1893
Sheridan street, from Brightwood avenue to Sherman street	780	30				2,660	1889
New-cut road, from Thirty-fifth to Thirty-ninth street	1,210					3,695	1891

a Permit work.

TABLE F.—Statement of character and extent of street pavements July 1, 1897—Continued.

SUBURBAN (NORTHWEST)—Continued.

Locality.	Carriageway.										Resurfaced; originally paved with—
	Length.	Width.	Asphalt.	Coal tar and concrete.	Granite.	Cobble and blue rock.	Macadam.	Asphalt block.	Gravel and unimproved.	Year paved.	Year resurfaced.
New Hampshire avenue (Petworth), from Rock Creek Church road to Omaha street.	<i>Feet.</i> 905	<i>Sq. yds.</i> 50	<i>Sq. yds.</i> 5, 681							1892	
Omaha street, from New Hampshire avenue to Fifth street.	920	35	3,536							1892	
Massachusetts avenue, from Florida avenue to Belmont street.	3,469						19,638			1893	
Road from Broad Branch road to Chevy Chase Circle.	403						7,387			1895	

SUBURBAN (NORTHEAST).

First street, from Q to R.	137	35	2,206	(a)						1891	Brick gutters.
First street, from R to alley.	519	35	5,538	(a)						1892	Do.
Second street extended, from R to T.	1,024	35	4,213	(a)						1891	Do.
Q street, from Lincoln avenue to First street.	584	35	2,268	(a)						1892	Do.
Q street, from First street to Eckington place.	430	35	1,666	(a)						1892	Do.
Third street, from R to Quincy.	262	35	1,133	(a)						1892	Do.
Quincy street, from R to Third street.	270	30	919	(a)						1891	
Quincy street, from Third street to Eckington place.	1,088	30	3,770	(a)						1891	
Eckington place, from Q to R.	536	24	1,560	(a)						1891	
Fourth street, from R to road track.	262	35	1,022	(a)						1891	
R street, from Fourth street to Brentwood road.	584	35	2,437	(a)						1891	
Nichols avenue, from Harrison street, southeast (Adacosta).		34			6,813					1889	Granite at railroad.
M street, from Twelfth to Trinidad avenue.	850						2,695			1891	Do.
										1894	

a Permit work.

REPORT OF SUPERINTENDENT OF STREETS.

WASHINGTON, July 20, 1897.

SIR: I have the honor to submit herewith report of the operations of the street department for the fiscal year ended June 30, 1897:

The appropriation for "Current repairs to streets, avenues, and alleys" was \$30,000. Of this amount there was expended \$29,745.62. (See statement marked A.)

During the year there were 1,936 dangerous holes repaired, aggregating 10,190 square yards, at a total cost of \$3,362.80.

Statement marked B is a list of the work done under the permit system, under which system the property owners requesting the improvements pay one-half the total cost, the District paying the other one-half.

Under the act of Congress of August 7, 1894, the Commissioners of the District of Columbia are empowered, whenever, in their judgment, the public health, safety, or comfort require it, to improve and repair alleys and sidewalks and pay the total cost out of the appropriation for "Assessment and permit work." One-half the cost of the work ordered under the assessment system is charged against the abutting property and becomes a lien upon said property. Statement marked C gives a list of the work which was done under the assessment system, the total amount of which is \$109,601.74.

The appropriation for "Replacing curbs and sidewalks around public reservations" was \$5,000, of which there was expended \$4,765.22. For list of the work done under this appropriation, see statement marked D.

Statement marked E gives a list of the miscellaneous work, the cost of which was paid out of various appropriations which do not come under the jurisdiction of this department. The total cost of such work was \$11,220.08.

Statement marked F gives a list of work done for parties which work is for their sole benefit, and which is paid for entirely by them. This work amounted to \$62.69.

Statement G gives number of square yards and cost of repairs to cuts made by various parties during the year ending June 30, 1897.

Respectfully submitted.

H. N. MOSS,
Superintendent of Streets.

The ENGINEER COMMISSIONER, DISTRICT OF COLUMBIA.

STATEMENT A.—*Work done under the appropriation for "Current repairs to streets, avenues, and alleys" from July 1, 1896, to June 30, 1897.*

Grading	cubic yards ..	4, 503
Flag laid	linear feet ..	2, 319
Flag relaid	do	13, 396
Curb set	do	313
Curb reset	do	6, 680
Cobble	square yards ..	19, 661
Brick sidewalk, paved	do	534
Brick sidewalk, repaved	do	4, 800
Granite block, paved	do	7, 423
Granite block, repaved	do	755
Vitrified brick, paved	do	496
Vitrified brick, repaved	do	53
Asphalt block, paved	do	14
Asphalt block, repaved	do	2, 763
Hydraulic base	cubic yards ..	160
Asphalt tile, repaved	square yards ..	241
Cement sidewalk	do	151
Vitrified block, paved	do	809
Vitrified block, repaved	do	218
Cement tile, repaved	do	161
Sodding	do	80
Labor		\$21, 807. 68
Material		7, 937. 94

STATEMENT B.—Regular permit.

No.	Location.	For whom done.	Grading.	Vitrified block paved.	Curb reset.	Curb set.	Concrete base.	Brick side-walk paved.	Cement side-walk.	Cement coping.	Asphalt block paved.	Cobble, re-paved.	Brick side-walk paved.	Brick on edge.	Cost.
1	Twelfth and C streets SE.	C. W. Shars.	Cu. yds.	Sq. yds.	Lin. ft.	Lin. ft.	Cu. yds.	Sq. yds.	Sq. yds.	Lin. ft.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	\$29.86
3	Patterson street, between North Capitol and First NE.	H. L. Rust.		17	11	44	1	36							55.30
4	1008, 1010, and 1012 Thirteenth street NW	Nathaniel McKay				87									70.23
5	214 Ninth street NW	A. G. Gross.			9	19			34.28						65.84
6	126 N street NW	Woodbury Blair			26	30			22.70						32.35
7	126 N street NW	do			30	30			29.35						41.38
8	1738 N street NW	do			54				36.68						53.79
9	Concord Art Gallery, Seventh street and New York avenue NW.	Jno. S. Larcombe.				700			780.17	276					1,891.87
10	612 and 614 Twelfth street NW	J. W. Thompson.				46			99.53						176.38
11	265 and 267 I street NW	M. G. Emery				20			172.31						223.26
12	489 Massachusetts avenue NW	S. C. Smoot.			8				25.97						90.48
13	Fourteenth, between G street and New York avenue (west side) NW.	Wm. Morrison.				18									20.40
14	Ward place, between Hampshire avenue and Twenty-second street (north side) NW	Jas. H. Grant.						72							46.59
15	911 and 913 G street NW	E. W. Denn.			15				62.27						96.80
16	1324 and 1326 G street NW	John I. Biddan			34				58.94						114.98
17	1732 Pennsylvania street NW	Jos. Gavler.			36				51.39						104.10
18	41 to 61, inclusive, Q street NE	R. W. Walker & Son							182.32						235.04
19	Seventh street, between D and E streets NW	Thos. W. Fowler			73				130.24						165.53
20	914 I street NW	Fredk. Pilling			7				25.37						33.38
21	2453 and 2455 P street NW	C. A. Langley				174			159.95						362.65
22	Alley, square 990	Henry Walter	26	48											79.97
23	16 to 46 Q street NE.	F. A. Blundon.							290.21						335.09
24	916 I street NW	A. F. Fox.							25.81						33.06
25	705, 707, and 709 Florida avenue NW.	P. A. Sheely.			64				88.61						176.09
26	187 Q street NW	J. C. Davidson.							17.13						21.95
27	161 Twenty-eighth street NW	G. A. King							38.04						48.73
28	911 T street NW	J. H. Purdy							19.17						24.56
29	1747 E street NW	James Hayes.			26				23.04						57.75
30	1763 Rhode Island avenue NW	C. A. Spaulding							43.71						61.82
31	48 to 62 Q street NE.	J. A. Blundon							184.09						237.31

32	Le Roy place, near Phelps place NW	E. K. Rawson	31	41	132	23.67	37.01
33	East and O streets NE	Mitchl Esch					205.94
34	1722 N street NW	J. C. Haul		30			32.29
35	1363 Yale street NW	C. S. Bradley					30.25
36	1365 Yale street NW	Mrs. S. E. Churchill					20.25
37	1367 Yale street NW	J. Hillman					19.83
38	1311 Yale street NW	Jennette M. Bradley					20.14
39	1313 Yale street NW	F. N. Small					20.55
40	1315 Yale street NW	A. L. Johnson					20.93
41	1317 Yale street NW	H. C. Towles					20.93
42	10 Yale street NW	H. H. Tallmadge					20.78
43	8 Q street NE	A. F. Onard					20.93
44	8 Q street NE	A. W. Childen					20.93
45	14 Q street NE	B. Hodges					20.93
46	14 Q street NE	J. F. Clarke					108.82
47	12 Q street NE	Kennedy & Davis					84.75
48	Ronoke street, between Thirteenth streets (north side) NW						236.61
49	All square NW	A. Isaner					45.76
50	723 Fifteenth street NW	J. V. N. Hrych					47.28
51	1810 Massachusetts avenue NW	Jane M. McGrabb					44.86
52	1511 Rhode Island avenue NW	Wm. P. Manning					54.07
53	1806 Massachusetts avenue NW	Charlotte M. Cosby					69.90
54	1822 Massachusetts avenue NW	Charlotte Bryson					9.37
55	1416 to 1432, Thirtieth street NW	I. G. Goebel					9.37
56	1438 Thirtieth street NW	James Conlon					8.80
57	1434 Thirtieth street NW	J. W. Coon					8.80
58	1440 Thirtieth street NW	M. C. Weaver					62.27
59	Thirtieth street, between Thirtieth and Thirtieth street NW						8.80
60	Thirtieth street, between Thirtieth and Thirtieth street NW						35.57
61	road (lot 288 square 1340) NW	Sarah Barr					42.66
62	1442 Thirtieth street NW	Mrs. Henderson					40.35
63	1612 Rhode Island avenue NW	A. T. Counoe					28.90
64	1724 Fifteenth street NW	W. S. Roosen					136.92
65	1732 Fifteenth street NW	Mary Groen					8.80
66	1740 N street NW	Mrs. Van Wyck					156.53
67	1800 Massachusetts avenue NW	N. Crowley					20.21
68	1414 Thirtieth street NW	Le Roy Tuttle					32.96
69	Phelps place, between Le Roy and Bancroft streets NW	Henry C. Jordan					162.82
70	1237 Tenth street NW	Sievers & Bro.					42.71
71	824 N street NW	Peter Fersinger					42.84
72	Northeast corner Twelfth and Little B streets NW	M. P. Caldwell					42.84
73	Fifteenth street, between East Capitol and A (west side) SE	L. A. Frailey et al.					42.22
74	1504 Twenty-first street NW	do					56.96
75	1500 Twenty-first street NW	do					
76	1508 Twenty-first street NW	do					
77	1620 K street NW	James M. Ewing					

STATEMENT B.—Regular permit—Continued.

No.	Location.	For whom done.	Grading.	Vitrified block, paved.	Curb reset.	Curb set.	Concrete base.	Brick side-walk, paved.	Cement coping-walk.	Asphalt block, paved.	Cobble, re-paved.	Brick side-walk, re-paved.	Brick on edge.	Cost.
			Cu. yds.	Sq. yds.	Lin. ft.	Lin. ft.	Cu. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	Sq. yds.	
78	1321 Connecticut avenue NW	John S. Larcombe.	.....	11	8	.....	1	.....	52.10	.....	2	.....	.....	\$105.77
79	Delaware avenue, between C and D streets SW.	Thomas W. Smith.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	24.52
80	1138 Fifteenth street NW.	American Security and Trust Co.	.....	.....	7	65	.....	.....	23.54	.....	.....	.....	.....	93.59
81	1228 Sixteenth street NW.	W. S. Bowen.	.....	.....	.....	.....	.....	.....	26.14	.....	.....	.....	.....	36.24
83	1705 Connecticut avenue NW.	C. A. Langley, agent.	.....	.....	23	.....	.....	.....	39.21	.....	.....	.....	.....	85.42
84	Alley, square 214.	J. H. McKenney.	.....	.....	5	36	2	.....	.....	63	10	.....	.....	111.66
85	Heckman street, between First and Second Sts.	Beck & Weller.	.....	.....	.....	107	.....	.....	53.99	.....	.....	.....	.....	133.53
86	941 East Capitol street.	J. Splendid.	.....	.....	37	.....	.....	.....	23.91	.....	.....	.....	.....	35.29
87	971 East Capitol street.	J. J. Appich.	.....	.....	36	.....	.....	.....	23.46	.....	.....	.....	.....	35.90
88	Harvard street, between Thirteenth and Fourteenth NW.	Charles M. Campbell.	.....	.....	.....	.....	.....	.....	101.51	.....	.....	.....	.....	130.63
89	Princeton street, between Thirteenth and Fourteenth NW.	S. R. Scharf.	.....	.....	.....	15	.....	.....	.....	.....	.....	.....	.....	13.85
90	2511 Fourteenth street NW.	James Lansburgh.	.....	.....	.....	.....	.....	.....	27.90	.....	.....	.....	.....	35.74
91	969 East Capitol street.	Charles Childs.	.....	.....	.....	.....	.....	.....	21.13	.....	.....	.....	.....	27.07
92	Lot 48, "Widow's Mite" subdivision.	Le Roy Tuttle.	16	.....	.....	.....	.....	.....	34.95	.....	.....	.....	.....	50.46
93	1498 K street NW.	S. G. Ward.	.....	.....	.....	.....	.....	.....	33.07	.....	.....	.....	.....	42.36
94	H street, between Eighth and Ninth NE.	W. L. Hughes.	.....	.....	.....	.....	.....	.....	12.84	.....	.....	.....	.....	16.45
96	1629 Sixteenth street NW.	John O'Donnell.	.....	.....	30	.....	.....	.....	34.79	.....	.....	.....	.....	48.50
97	2423 H street NW.	Holtzclaw Bros.	.....	.....	20	.....	.....	.....	24.96	.....	.....	.....	.....	50.16
98	913 I street NW.	L. Kolepinski.	.....	.....	25	.....	.....	.....	22.14	.....	.....	.....	.....	30.66
99	2425 H street NW.	Holtzclaw Bros.	.....	.....	.....	20	.....	.....	22.85	.....	.....	.....	.....	47.34
100	E street, between Seventeenth and Eighteenth NW.	Corcoran Art Gallery.	.....	11	.....	.....	1	.....	.....	.....	2	4	.....	24.68
101	100 Fourth street (A street side) SE.	W. J. Kehoe.	.....	.....	88	.....	.....	.....	52.83	.....	.....	.....	.....	76.99
102	400 and 402 A street SE.	F. A. Wood.	.....	.....	.....	.....	.....	.....	52.61	.....	.....	.....	.....	72.90
103	116 Second street SE.	Dr. J. W. Bayne.	.....	.....	21	.....	.....	.....	23.43	.....	.....	.....	.....	32.57
104	435, 435, and 417 A street, and 107, 109, and 111 Fifth street SE.	do.	.....	.....	210	.....	.....	.....	167.64	.....	.....	.....	.....	244.59
105	411 A street SE.	F. S. Obold.	.....	.....	30	.....	.....	.....	25.12	.....	.....	.....	.....	36.12
106	808 Fifth street NW.	Mrs. H. Reizenstein.	.....	.....	35	.....	.....	.....	20.12	.....	.....	.....	.....	30.10
107	419 A street SE.	T. D. Keleher.	.....	.....	17	.....	.....	.....	13.81	.....	.....	.....	.....	19.92
108	412, 414, and 416 A street SE.	Mrs. Martha Flemer.	.....	.....	224	.....	.....	.....	193.95	.....	.....	.....	.....	280.54
109	218 I street NW.	M. G. Emery.	.....	.....	21	.....	.....	.....	23.45	.....	.....	.....	.....	32.40
110	220 I street NW.	do.	.....	.....	21	.....	.....	.....	24.04	.....	.....	.....	.....	33.42

STATEMENT C.—Assessment work.

No.	Location of work.	Grading.	Vitrified block, paved.	Asphalt block, paved.	Asphalt block, re-paved.	Cement sidewalk.	Brick sidewalk, paved.	Brick sidewalk, re-paved.	Cobble.	Curb set.	Curb reset.	Granite block, repaved.	Cement coping.	Cost.
111	217 I street NW	E. S. McCleary												40.92
112	217 I street NW	F. P. Walker												138.15
113	440 Seventh street (E side) SW.	S. M. Jones											4	4.40
114	2633 H street NW	Hamie H. Johnson												36.79
115	Thirty-sixth and M streets NW	Capital Traction Co.	6			170								1,040.96
116	Fourth street and Pennsylvania avenue SE	Adam Gaddis												36.35
117	402 and 407 A street SE	F. R. Wallace												38.01
118	1721 P street NW	Hamie H. Johnson												2.79
119	1725 P street NW	John Tweedle												4.17
120	210 I street NW	John S. Edwards												47.21
121	1707 Q street NW	J. B. Wight												37.80
122	919 S street NW	M. C. Figg												23.06
123	1821 and 1824 Phelps place NW	B. H. Warner & Co.												41.30
124	921 S street NW	J. C. Weir												33.46
125	627 and 629 I street SE	John H. Voorhees	8											23.22
126	923 S street NW	J. O. Manson												27.96
127	T street, between Sixteenth street and New Hampshire avenue NW	George S. Cooper												4.06
128	Thirty-fourth street, between N and O NW	Ed. Forrest												3.15
129	Twelfth and D streets NE	Henry Kerns	3											30.05
130	Total		264	105	1,298	2,137	931	5,885.27	276	120	24	24	16	10,966.18

No.	Location of work.	Grading.	Vitrified block, paved.	Asphalt block, paved.	Asphalt block, re-paved.	Cement sidewalk.	Brick sidewalk, paved.	Brick sidewalk, re-paved.	Cobble.	Curb set.	Curb reset.	Granite block, repaved.	Cement coping.	Cost.
1	Alley, square 17													\$3,976.76
2	Alley, square 307													341.52
7	W street, between Twelfth and Thirteenth (north side) NW	119	1,245											458.27
8	Florida avenue, between New York avenue and Brentwood road (south side) NE	315			356.58		500							247.49
9	First street, between O and P street (both sides) NW						500							373.47
10	Delaware avenue, from G to K street (both sides) SW	388					1,082							626.77
11	Fifteenth street, between E and Gales (east side) NE	755					647							444.51
12	Fifth street, between F and H (both sides) NE	2,044					1,708							2,858.95

[illegible]

STATEMENT D.—Replacing sidewalks and curb around public reservations.

No.	Location of work.	Cement side-walk.	Curb set.	Curb reset.	Flag relaid.	Cement coping.	Brick sidewalk laid.	Grading.	Cost.
		Sq. yds.	Lin. feet.	Lin. feet.	Sq. yds.	Lin. feet.	Sq. yds.	Cu. yds.	
1	Duport Circle NW								\$322.30
2	Farragut Square NW								257.30
3	Reservation bounded by Connecticut avenue, Q street, and Twentieth street NW.	278.70	312	240	1,552	303.5			637.30
4	Reservation bounded by Connecticut avenue, M street, and Eighteenth street NW.	314.28	380			267.7			782.03
5	Reservation bounded by New Hampshire avenue, Seventeenth street, and T street NW.								
6	Reservation bounded by New Hampshire avenue, Seventeenth street, and S street NW.	139.77		45		157.2			209.03
7	Reservation bounded by Connecticut avenue, Eighteenth street, and N street NW.								
8	Delaware avenue, between G and H (east side), and Delaware avenue, between K and L NW.	227.27		63		243.5	828	273	333.53
9	Reservation bounded by Rhode Island avenue and M street NW.	171.61							206.36
10	Reservation intersection of Rhode Island avenue and M street NW.	10.93							173.64
11	Reservation bounded by O street, Florida avenue, and New York avenue NE.						150		13.84
12	Pump House, U street, between Sixteenth and Seventeenth NW.	93.57						12	80.36
13	K street, between Ninth and Tenth (north side) NW.	112.06		100					120.82
14									156.16
15	Total	1,348.19	702	1,018	2,502	971.9	978	285	3,595.17

Number.	Location.	Appropriation.	Asphalt tile, repaved, square yards.	Grading, cubic yards.	Brick sidewalk, paved, square yards.	Brick sidewalk, repaved, square yards.
4	Kentucky avenue, between East Capitol and B sts. (west side) SE.	Improvements and repairs, southeast section.	---	74	---	---
5	Thirteenth street, between East Capitol and D, SE.	do.	---	650	---	---
6	N street, between Twenty-eighth and Thirtieth NW.	Repairs to concrete pavements.	---	---	---	188
7	Fifteenth and C streets SE.	"Public schools, new 8-room building and site, eighth division, B street SE., 1896."	---	170	260	40
9	H street, between Four-and-a-half and Sixth (south side) SW.	Repairs to concrete pavements.	---	---	---	300
10	Thirteenth street, between East Capitol and D, SE.	Improvements and repairs, southeast section.	---	108	---	322
11	Florida avenue, between Ninth and M streets (north side) NE.	Improvements and repairs, northeast section.	---	---	---	---
13	M st., between Thirty-third and Thirty-fourth (south side) NW.	Improvements and repairs, Georgetown section.	---	653	1,937	---
14	W street, between Twelfth and Thirteenth (south side) NW.	Improvements and repairs, northwest section.	---	---	---	175
17	Engine House No. 2, D street, between Fourteenth and Fifteenth NW.	Transfer unexpended balance, etc., to complete Engine House No. 2.	---	45	---	14
18	Thirty third and M streets NW.	Work on streets and avenues, Georgetown.	---	---	---	---
20	Thirty-third street, between M and Canal NW.	do.	---	296	---	---
21	Alley, square 615 NW.	Work on streets and avenues, northwest section.	---	---	---	---
23	Phelps place, between Le Roy place and California avenue NW.	Repairs to concrete pavements.	---	1,150	---	119
24	Fourth street, between East Capitol st. and Pennsylvania ave. SE.	do.	---	---	---	258
26	P street, between North Capitol and First NE.	Improvements and repairs, northeast section.	---	500	---	---
27	From square 212 to Yale street, corner Thirteenth NW.	Assessment and permit work, county roads allotment.	---	---	---	---
28	Western Market, Twenty-first and K streets NW.	Repairs to market houses.	---	3	---	---
30	South Carolina avenue, between Seventh and Ninth street SE.	Improvements and repairs, southeast section.	---	---	---	1,005
31	Northeast corner Ninth and I streets SE.	do.	---	---	---	135
32	B street, between Eighth and Ninth NE.	Improvements and repairs, northeast section.	---	---	---	1,015
34	M street, between Second street and Florida avenue NE.	do.	---	2,037	3,260	---
35	Florida avenue, between North Capitol and First streets NW.	Improvements and repairs, northwest section.	---	---	---	165
36	Florida avenue, between P and North Capitol streets and Florida avenue between P and First streets NE.	Special appropriation for P street.	---	650	---	384
37	Florida avenue, between Ninth and M streets NE.	Improvements and repairs, northeast section.	---	866	---	2,022
38	U Street pump house NW.	High-service distribution.	---	40	---	---
39	M st., between Thirty-third and Thirty-fourth (north side) NW.	Improvements and repairs, Georgetown.	---	178	---	448
42	Princeton st., between Thirteenth and Fourteenth (both sides) NW.	Yale, etc., streets.	---	---	---	---
44	No. 12 Engine House, corner North Capitol and Quincy streets.	New engine house, etc., in vicinity of North Capitol street and Florida avenue.	---	28	---	---
45	Seventh street and Florida avenue NE.	Improvements and repairs, northeast section.	---	6	---	---
46	No. 13 Engine House, Seventh street extended NW.	New engine house in vicinity of Brightwood avenue.	---	136	---	---
49	Western Market, Twenty-first and K streets NW.	Special repairs to market houses.	---	4	---	25
50	M street, between Thirty-first and Thirty-second (south side) NW.	Improvements and repairs, Georgetown.	24	---	---	592
Total.			24	7,594	5,457	7,207

cellaneous work.

Cement sidewalk, square yards.	Curb set, linear feet.	Curb reset, linear feet.	Flag laid, linear feet.	Flag relaid, linear feet.	Cobble, square yards.	Curb taken up, linear feet.	Asphalt block, paved, square yards.	Vitrified block, paved, square yards.	Concrete, cubic yards.	Vitrified brick, repaved, square yards.	Macadam replaced, square yards.	Sodding, square yards.	Hauling cobble and flag, square yards.	Brick on edge, repaved, square yards.	Granite block, repaved, square yards.	Pipe laid, 12-inch, linear feet.	Cost.
	639	39															\$542.11
	3,875																3,063.06
																	37.75
	143		143		50												233.98
																	58.75
						1,100											156.00
																	18.75
																	415.59
																	28.50
	36	102					83	51	63								318.56
75.87																	93.77
	520				588												320.28
										148							62.50
		1,035		330	110						350	23					738.25
																	64.50
																	55.62
													718				28.00
														56			17.00
																	203.89
																	20.62
					47												126.73
																	821.63
					26												44.37
			80														199.87
																	454.82
	20							200	2								316.94
	15														22		108.22
	1,373	66															999.00
	84						207										447.34
			164														19.12
	49						513								4	72	889.42
							106										175.85
				85			23										139.29
75.87	6,754	1,242	387	415	821	1,100	932	251	65	148	350	23	718	56	26	72	11,220.08

66 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

STATEMENT F.—Whole-cost work.

No.	Location.	For whom done.	Curb taken up.	Vitrified block, repaved.	Curb reset.	Asphalt tile, paved.	Cost.
			Lin. ft.	Sq. yds.	Lin. ft.	Sq. yds.	
3	Florida avenue, between North Capitol and First streets (north side) NW.	E. J. Bentley	9				\$2.19
4	California avenue, between Columbia road and Phelps place NW.	Gen. D. W. Flagler, (repairing street washer).					4.79
5	Alley, square 551	Edward Kern		14			11.39
6	Fourteenth and T (south-west corner) NW.	F. B. Pyle			14	82	44.32
Total			9	14	14	82	62.69

STATEMENT G.—Number of square yards and cost charged for repairs to cuts made by plumbers and others in streets, avenues, and alleys during the year ended June 30, 1897.

	Number.	Square yards.	Cost (amount charged).
Plumbers' cuts:			
Sheet asphalt	203	897.18	\$2,691.54
Granite block	117	707	954.45
Asphalt block	71	224.89	303.60
Cobblestone and rubble	153	819.09	308.59
Vitrified brick and block	62	252.23	340.51
Macadam	71	440	594.00
Granolithic	31	115.55	259.99
	708	3,455.94	5,512.68
The following cuts have been repaired and charged to the various appropriations and deposits specified:			
Water department	281	3,723.47	3,298.39
Sewer department	308	17,102.76	5,262.58
Current repairs, streets, etc.	127	4,548.40	2,914.61
Repairs to concrete pavements	2	2.05	2.28
Street lighting	22	67.69	94.74
Improvements and repairs, northeast section	4	4.62	10.03
Improvements and repairs, southeast section	3	1.81	3.97
Yale, etc., streets	1	30.60	30.64
Deposit Cranford Paving Co.	1	3.32	2.82
Deposit Mrs. A. M. McMillan	1	12.33	7.67
Deposit Pintsch Compressing Co.	1	2,590.63	2,273.39
Deposit Chesapeake and Potomac Telephone Co.	1	334.37	340.55
Deposit Washington Gaslight Co.	150	1,103.34	2,217.50
Deposit United States Electric Light Co.	131	2,438.44	5,224.90
Deposit Potomac Electric Power Co.	23	5,119.68	9,951.04
Total	1,764	40,539.45	37,147.79

NOTE.—The above amounts do not include the cost of surface repairs to sheet asphalt pavements charged against any appropriation.

The following is a comparison between the repairs made to plumbers' cuts during the year ended June 30, 1897, and the seven preceding years:

Year.	Number.	Square yards.	Cost.
1889-90			
1890-91	393	2,085.06	\$3,712.06
1891-92	852	3,899.61	6,488.02
1892-93	980	5,220.50	6,994.58
1893-94	2,132	8,694.67	14,025.68
1894-95	1,583	9,233.25	15,272.72
1895-96	1,236	6,718.57	9,267.71
1896-97 (includes gas, electric lighting, and deposit jobs as in former years)	1,305	11,941.03	14,156.18
	1,016	15,058.07	25,530.55

REPORT OF SUPERINTENDENT OF ROADS.

WASHINGTON, July 20, 1897.

SIR: I have the honor to submit herewith report of operations of road department during fiscal year ended June 30, 1897.

Very respectfully,

GEO. N. BEALE,

Superintendent of Roads.

The ENGINEER COMMISSIONER, DISTRICT OF COLUMBIA,
(Through Captain Beach, U. S. A.)

Expenditures, repairing county roads and suburban streets, fiscal year 1896-97.

	Amount.		Amount.
CENTRAL SECTION.		CENTRAL SECTION—continued.	
Fourteenth street road	\$1,165.46	Connecticut avenue extended	\$215.11
Vine street	1.25	Seventeenth street extended	110.74
Binney street	25.62	R street extended	29.67
Crescent street	7.50	Massachusetts avenue extended	1.87
Superior street	2.25	Magnolia avenue	4.75
Quarry road	250.98	Roanoke street	69.99
Seventh street extended .....	.63	Quincy street	11.50
Bunker Hill road	1,110.96	Twelfth street extended	233.93
Brightwood avenue	2,239.79	Wallace street	119.95
Woodley lane	105.75	Gales street	4.88
Lincoln avenue	204.31	Elm street	60.73
Linean Hill road	621.24	Randolph street	9.75
Rock Creek Church road	336.04	Harewood avenue	2.12
Bladensburg road	1,220.13	Seaton street	23.25
Bennings road	1,067.59	Central avenue	26.00
First street extended NW	374.43	Kendall street	7.12
Blacksmithing	292.93	Lancing street	58.98
Brentwood road	229.74	Bates road	5.75
Albany street	13.00	Blair road	15.62
Miscellaneous labor	1,297.12	Brown street	68.12
Park street	457.99	Fifth Street road	25.46
Phelps place	558.32	Eslin street	24.37
Howard avenue	225.53	Fifth street	278.88
Kenesaw avenue	629.32	Fifteenth Street road	84.25
Huntington place	10.00	Grant street	5.12
Kramer street	21.25	Harewood road	553.74
Philadelphia street	31.24	Lamar street	4.00
Frankfort street	37.25	Lydecker avenue	28.49
Fort street	24.31	Morgan avenue	22.50
Hartford street	29.50	Montello subdivision	58.72
Thirteenth street	25.62	Mount Olivet road	2.75
Dover street	8.50	Oak street	29.67
Capitol street	126.50	Pomeroy street	77.25
Concord street	22.74	Princeton street	47.80
Meridian street	35.94	Queens Chapel road	176.66
Twenty-second street	13.12	Riggs road	31.44
Cincinnati street	15.61	Eleventh street	1.38
Staughton street	7.86	Rock Creek Ford road	46.00
Chestnut avenue	17.33	Sargent road	25.78
Providence street	75.25	Sheridan street	20.87
Indianapolis street	23.25	Shepherd road	728.99
Carroll avenue	42.05	Sixteenth Street road	526.88
Tenth street	44.25	Sixth street	9.75
Sherman avenue	173.98	Spring street	180.25
Whitney street	277.33	Sumner street	38.25
Fourth street	185.37	Flint street	64.55
Rosemont avenue	241.88	Kenyon street	7.30
Richmond street	12.38	Erle street	12.00
University place	13.00	Rosedale street	8.50
Columbia road	370.68	Lanier Terrace	2.75
Duncan street	23.44		
Material, general use	1,161.66	Total	21,045.42
Detroit street	18.77		
Twenty-fourth street	7.25	WESTERN SECTION.	
Emporia street	14.00	Argyle Mill road	167.48
Thirteenth street road	348.47	Military road	293.78
Klinge road	115.31	Brookville road	99.99
Howard street	64.05	Little Falls road	78.12
Center street	27.00	Chapel road	123.58
Ontario avenue	9.75	Daniels road	176.19
Michigan avenue	542.49	Chain Bridge road	48.75
Kalorama avenue	2.75	Falls road	189.17
California avenue	13.99	Klinge road	45.50
Piney Branch road	128.93	Loughboro road	44.25
Third street	34.68	Murdock Mill road	108.25
Irvin street	4.63		

Expenditures, repairing county roads and suburban streets, etc.—Continued.

	Amount.		Amount.
WESTERN SECTION—continued.		EASTERN SECTION—continued.	
Red lane road	\$34.50	Sheridan street	\$123.25
River road	57.38	Stanton avenue	82.37
Arthur street	48.02	Stephens avenue	13.75
Blacksmithing	60.60	Suit road	178.74
Ridge road	267.96	T street	35.86
Thirty-seventh street extended	355.54	Washington street	20.70
Howard street	14.00	Wheeler road	4.25
Pierpoint place	28.00	Walker road	61.36
Milwaukee street	36.75	Bowen street	148.12
Thirty-fifth street (Oak View)	14.00	Howard street	80.06
Thirty-fourth street	24.50	Fort Stanton road	7.00
Thirty-sixth street	28.00	Taylor street	16.50
Miscellaneous labor	1,119.53	Spring street	29.13
Connecticut avenue extended	285.20	Chestnut street	14.38
Hartford street	2.50	High street	12.91
Grant road	191.97	Madison street	40.00
Broad Branch road	338.26	Minnesota avenue	35.75
Ninth street	32.76	Nichols avenue	1,382.39
Canal road	2,703.38	Benning road	200.78
Des Moines street	33.69	Franklin street	14.75
Woodley lane	495.81	Prout street	62.49
New-cut road	748.43	Harrison	326.20
Tunlaw road	346.96	Livingston road	472.17
Tenleytown road	1,285.94	Anacostia road	231.83
Forty-first street	62.50	Blacksmithing	67.30
Cathedral avenue	19.50	Miscellaneous labor	530.29
Pierce Mill road	237.61	Good Hope road	142.75
Material, general use	20.34	Bowen road	108.49
Total	10,262.69	Branch avenue	354.60
EASTERN SECTION.		Bliss avenue	54.50
Adams street	13.84	Maple avenue	52.15
Central avenue	65.18	Pennsylvania avenue extended	87.25
Fillmore street	31.75	Twenty-eighth street (Bliss subdivi-	
Giesboro road	37.25	vision)	6.75
Hamilton road	135.87	Congress Heights subdivision	120.75
Jackson street	334.30	Summit avenue	4.44
Jefferson street	44.46	Poplar avenue	14.13
Monroe street	2.50	Total	6,130.89
Morris road	225.49	Steam roller	2,000.00
Naylor road	66.12	Sprinkling various sections	544.24
Pierce street	35.99		2,544.24

SUMMARY.

Central section	\$21,045.42
Western section	10,262.69
Eastern section	6,130.89
Steam roller and sprinkling	2,544.24
Total	39,983.24
Expended from appropriation. "Sprinkling streets, etc., 1898," in addition to amount expended from appropriation "Repairs of roads," as above	878.60

Expenditures, assessment and permit work, 1897.

UNDER ASSESSMENT SYSTEM.

Location.	Brick sidewalk.	Curb set.	Cost.
Columbia road, between Quarry road and Eighteenth street.	Sq. yards.	Lin. feet.	
Princeton street, between Thirteenth and Sherman avenue.	1,823		\$353.43
Yale street, between Thirteenth and Sherman avenue.		1,452.70	1,237.12
Connecticut avenue, between Rock Creek and Zoo.		1,468.51	1,149.88
Roanoke street, between Thirteenth street and east line	2,100	2,081.70	2,930.87
Columbia Heights			
Columbia street, between Thirteenth and Fourteenth streets.	492	1,484.34	1,209.46
			268.20

Expenditures, assessment and permit work, 1897—Continued.

REGULAR PERMIT WORK.

Location.	Brick sidewalk.	Curb set.	Cost.
Columbia street, between Thirteenth and Fourteenth streets NW.....	Sq. yards. 530½	Lin. feet. -----	\$296.44
Emporia street, between Twenty-second and Twenty-fourth streets NE.....	100	-----	43.30
Kenesaw avenue, between Twelfth and Thirteenth streets NW.....	13	-----	9.76
Harvard street, between Thirteenth and Fourteenth streets NW.....	110	-----	89.38
Thomas street, between Le Droit avenue and property line.....	290	-----	290.41
T street, between Lincoln avenue and First street NW.....	809½	-----	272.08
University place, between Welling and Euclid.....	295	384.60	434.66
Miscellaneous, office expenses, engineering, etc.....			509.58
Total.....			9,094.57

Employees, road and bridge departments (per diem), fiscal year 1896-97

Class.	No.	Con-structing county roads.	Current repairs, county roads.	Assess-ment and per-mit work.	Con-struction and repair of bridges.	Ordinary care of bridges.	Florida avenue.	Current repairs, streets, avenues, and alleys.	Sewers.
Foremen.....	7	\$2,036.10	\$3,103.00	\$183.00	-----	-----	\$24.50	\$47.25	\$12.50
Assistant engineers.....	3	2,131.21	-----	245.25	\$146.79	\$525.00	-----	-----	-----
Other employ-ees.....	460	15,031.48	17,928.91	1,410.53	2,612.97	2,717.78	130.00	176.73	125.30

Under appropriation for "Current repairs, county roads, etc., 1897," the principal roads and streets repaired were as follows: On Fourteenth street road, graveling and general repairs; Bunker Hill road, graveling and general repairs; Bladensburg road, graveling and general repairs; Bennings road, graveling; Linnean Hill road, graveling; Park street, graveling; Phelps place, grading; Kenesaw avenue, graveling; Michigan avenue, grading; Harewood road, graveling; Shepherd road, graveling; Sixteenth street extended NW., graveling; Canal road, macadamizing and graveling; Tenleytown road, graveling and general repairs; Nichols avenue, graveling and general repairs; Livingston road, graveling and general repairs.

On other roads and streets repairs were of a minor nature, such as are required from time to time.

Attention is respectfully called to the fact that the present appropriation of \$40,000 is not adequate to keep existing roads in repair. The amount named during the fiscal year was reduced by an expenditure of \$2,000 for purchase of steam roller and \$544.24 for sprinkling.

To properly maintain roads and suburban streets would require at least \$75,000, and an appropriation of \$5,000 is needed for sprinkling main thoroughfares.

REPORT OF THE ENGINEER OF BRIDGES.

WASHINGTON, July 20, 1897.

CAPTAIN: I have the honor to submit the following report for the fiscal year ended June 30, 1897:

ORDINARY CARE OF BRIDGES.

Keepers were stationed at the Aqueduct Bridge, over the Potomac, and the Pennsylvania Avenue and Navy-Yard bridges, over the Eastern Branch. At the last-named structure the operation of the draw requires a keeper, and at the other two the demands of the public convenience justify their retention. These men are special police officers, and, in addition to caring for the cleanliness and safety of the structures, they enforce public order and have frequently made arrests and secured convictions in cases of violation of law.

70 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

The bridge inspector maintained under the appropriation has made careful inspection of all District bridges and culverts, and no accidents to persons or property have occurred on such structures, so far as known.

The appropriation barely suffices for the pay of these employees.

STATEMENT OF APPROPRIATION.

Amount of appropriation	\$3,500.00
Amount of expenditures	3,449.63
Balance	50.37

CONSTRUCTION AND REPAIR OF BRIDGES.

The amount of this appropriation is so small in proportion to the work to be done that only repair work could be undertaken. Toward the end of the year the repayment of nearly \$1,000 by street railway companies enabled the construction of a much-needed culvert at Illinois avenue and Piney Branch, the only construction item in the year's work.

The details of expenditure are given in the statement of work done, transmitted herewith, showing an unexpended balance of \$4.48.

An increase in the appropriation for bridges is recommended. There was never before so large an extent of bridge superstructure to be cared for, and yet the appropriations have lately been below the average of former years. For the fiscal years 1887 to 1894 the appropriations averaged $7\frac{1}{2}$ cents per square foot of bridge floor to be maintained. Since then they have averaged $3\frac{1}{2}$ cents, a difference of over one-half.

The structures have suffered in consequence, have deteriorated, and no construction work can be undertaken except under conditions that make it compulsory.

The bridge floors of the larger bridges are very expensive to renew, and, from lack of funds, it has unfortunately become the fact that permission has had frequently to be refused to permit the passage of heavy loads which the bridges themselves could easily carry, but which would break through the deteriorated and weakened floors. This is not just to the citizens or to the District, which loses the full value of the investment represented by the cost of the bridges.

The consolidation of the appropriations for "Ordinary care of bridges" and for "Construction and repair of bridges" into a single one for "Bridges" has been constantly recommended for several years, and the recommendation is here renewed. It is done in the interest of simplicity of accounts and of work. No additional cost would result, since each appropriation is regularly expended to its full amount. The amount of such consolidated appropriation for bridges should be \$25,000, the sum formerly given for such work when there was much less of it to do.

Washington bridges are not of an equal class with other of her public works, as a result of an economy at their expense, which ought not, in justice, to be further continued.

For individual structures the following is recommended:

That K Street Bridge, over Rock Creek, be reconstructed, at an estimated cost of \$20,000.

That the Navy-Yard Bridge, over the Eastern Branch, be reconstructed, at an estimated cost of \$250,000.

That M Street Bridge, over Rock Creek, be reconstructed, with a paved floor system, at an estimated cost of \$30,000.

Provision was made in the appropriation bill for the fiscal year 1898 for widening the approaches and superstructure of the P Street Bridge, over Rock Creek, and for the securing of competitive designs for a new structure on the line of Connecticut avenue extended.

Provision was also made in the same act for a survey and design for a new bridge crossing Rock Creek on the line of Massachusetts avenue, the work to be done under the direction of the Secretary of War.

The recommendation made in previous reports of a bridge on this line is not herein renewed, in expectation that suitable action will result from the provision above stated.

Respectfully submitted.

GEO. H. BAILEY,
Engineer of Bridges.

The ENGINEER COMMISSIONER, DISTRICT OF COLUMBIA.
(Through the Computing Engineer.)

Expenditures, construction and repair of bridges.

Order.	Bridge.	Amount.	Remarks.
241.	49.	\$353.51	Repairing floor, etc.
242.	55.	34.05	Repairing floor, sidewalk, and rail.
242.	55.	2,939.07	New lumber for reflooring.
243.	55.	211.80	Repairing floor and sidewalk.
245.	13.	16.25	Repairing floor.
247.	54.	9.63	Do.
248.	34.	15.49	Repairing floor and railing.
251.	36.	9.49	Repairing floor and adjusting bridge.
252.	7.	40.61	Repairing floor and cementing bottom posts.
253.	52.	150.80	Repairing rail, painting, etc.
255.	54.	4,373.09	Relaying floor and sidewalk.
256.	57.	67.62	Putting in pipe culvert.
257.	72.	59.06	Do.
258.	73.	45.46	Do.
259.	68.	36.72	Do.
261.	31.	80.79	Repairing floor and fence on approaches.
262.	27.	13.60	Repairing floor and concreting posts.
263.	25.	2.19	Repairing floor.
265.	13.	318.81	Rebuilding bridge.
266.	26.	20.77	Repairing floor.
268.	18.	1.38	Do.
269.	30.	33.59	Repairing floor and sidewalk.
271.	40.	4.53	Repairing railing.
273.	75.	1.00	Cleaning culvert.
274.	Culvert	3.13	Repairing culvert on Military road.
275.	70.	14.63	Repairing pipe culvert.
276.	71.	14.62	Do.
277.	51.	8.00	Laying new floor.
278.	64.	27.97	Putting in new joists.
279.	48.	7.88	Repairing.
280.	Culvert	5.50	Brightwood avenue, cleaning obstructions.
281.	44.	1.37	Repairing floor.
282.	Culvert	7.50	Branch avenue, cleaning obstructions.
283.	39.	9.87	Repairing.
286.	3.	2.25	Repairing floor.
287.	Culvert	450.51	Illinois avenue, grading for culvert.
Contract	do	1,063.84	Illinois avenue, constructing stone culvert.
290.	do	36.30	Repairing head wall.
291.	28.	5.75	Repairing floor.
292.	Culvert	26.81	Canal road, removing obstructions.
293.	do	11.55	Fourteenth street road, repairing head wall.
294.	do	1.25	Grant road, repairing head wall.
295.	do	1.25	Chappel road, repairing head wall.
296.	do	7.36	Brentwood road, repairing head wall.
Labor	Various	32.16	Miscellaneous.
Tools	do	49.75	For general use.
Salaries	do	253.29	Engineer, clerk, etc.
Material	do	82.54	For general use.
Total		10,934.39	
Credit:			
Repayment by Capital Traction Co., bridge No. 30.		931.06	
Repayment by Metropolitan R.R.Co., bridge No.34.		7.81	
		938.87	
		9,995.52	

Amount of appropriation	\$10,000.00
Net expenditures	9,995.52
Balance	4.48

REPORT OF THE SUPERINTENDENT OF SEWERS.

WASHINGTON, August 3, 1897.

SIR: I have the honor to submit the following report of the operations of the sewer division for the fiscal year 1896-97.

Under the appropriation for cleaning and repairing sewers and basins work was performed as follows: 123,049 linear feet of pipe sewers, 10,193 linear feet of brick sewers, 4,430 manholes, and 81,002 receiving basins were cleaned, from which were removed 6,859 cubic yards (estimated) of street detritus and sludge; 1,633 linear feet of pipe sewers were taken up and relaid; 591 linear feet of brick sewers were repaired; 699 minor repairs to sewers were made; 8 manholes were constructed; 145 manholes were repaired; 90 manholes were reconstructed; 74 new manhole covers were placed in position in lieu of old defective covers; 3 receiving basins were constructed; 263 receiving basins were repaired; 38 new tops were placed on street receiving basins; 70 new grates and frames were placed on alley and gutter basins; 23 receiving basins were reconstructed, and 9 receiving basins were abandoned.

Under contract 92.8 feet of the bottom of Slash Run sewer was reconstructed at a cost of \$815.15.

The flushing gates at the outlet end of the Tiber sewer were advantageously operated throughout the year.

The tidal sewers and sediment chambers were cleaned with regularity. One flushing gang was employed throughout the year.

Work was begun on the reconstruction of the main sewer in Sixth street SE., between K and N streets. The amount expended in cleaning basins was \$12,450.09.

Under the appropriation for replacing obstructed sewers there were constructed under contract 1,138 linear feet of 12-inch sewer and by day labor 9,703 linear feet of pipe sewers varying from 8 inches to 24 inches in diameter; 1,212 linear feet of 6-inch lateral connections and 61 manholes. The use of 4-inch iron pipe in short sections connected with a force pump, for the purpose of conveying sewage during the progress of the work of replacing sewers, is an improvement upon previous practice and gave good results.

Under the appropriation for permit work there was constructed by day labor 4,194 linear feet of pipe sewers, varying from 6 inches to 18 inches in diameter, and 16 manholes, divided among 31 jobs, averaging in cost per job \$187.53, in length of sewer per job 135.3 linear feet, and in cost per linear foot \$1.386.

Under the assessment system there was constructed by day labor 30,597 linear feet of pipe sewers, varying in diameter from 8 inches to 21 inches, 194 manholes, and 2 receiving basins, divided among 133 jobs, averaging in cost per job \$322.84, in length of sewer per job 230.1 linear feet, and in cost per linear foot \$1.403. Under contract there was constructed 1,070 linear feet of 12-inch sewer and 7 manholes.

I again invite attention to the assessments made of sewers constructed under the assessment system. According to present practice, the amount charged against abutting property is in direct proportion to the linear frontage of the sewer on the abutting property. In view of the fact that practically equal benefit is conferred by a small or large frontage, this rule is not equitable. I suggest that the law should be changed in such manner that the amount assessed may be divided among the abutting lots in proportion to their superficial extent.

Sewers were constructed at applicants' cost, aggregating 495 linear feet, varying from 8 inches to 21 inches in diameter, and 5 manholes, divided among 15 jobs and averaging in cost per job \$51.43.

Under the appropriation for main and pipe sewers, main sewers were constructed in the following-named localities: 1 street SW., from Canal to Third streets; Third street SW., from E to I streets; Fifteenth street NE., from A to C streets; B street NE., from Fifteenth street to North Carolina avenue; North Carolina avenue, between B and Fourteenth streets; Georgia avenue SE., from Sixteenth to Seventeenth streets; Seventeenth street SE., from Georgia avenue to E street. There was also constructed 3,336.94 linear feet of pipe sewers, varying from 15 inches to 24 inches in diameter. By day labor there was constructed 14,845 linear feet of pipe sewers varying from 8 inches to 24 inches in diameter, 103 manholes, and 68 receiving basins.

Under the appropriation for suburban sewers, main sewers were constructed in the following-named localities: Fourteenth street NW., from Center to Park streets; Fifth street NW., from Newark to Omaha streets; Flagler place, from W street to the reservoir, and the sewer in Fifteenth street extended, from Kenesaw to Grant avenues, were completed. There was also constructed 7,010.69 linear feet of pipe

sewers varying from 12 inches to 24 inches in diameter. By day labor there was constructed 6,308 linear feet of pipe sewers varying from 10 inches to 24 inches in diameter and 126.2 linear feet of 2.25-foot by 3.375-foot brick sewer and 27 manholes. Work was commenced, under contracts, upon the trunk sewer in the valley of Piney Branch, rights of way for the same having been secured without cost to the District.

Under the appropriation for automatic siphons, 8 flushing basins were constructed. The following work was performed and charged to the appropriations for Brookland, Kenesaw avenue, suburban, Fifteenth and F streets portions of Easbys Point intercepting sewer, Rock and B street intercepting sewer, cleaning and repairing sewers and basins, improvements and repairs various sections, repair of county roads, and repairs to concrete pavements: Two thousand one hundred and fifty-two linear feet of pipe sewers varying in size from 8 inches to 24 inches in diameter, 70 linear feet of 2.5-foot by 3.75-foot brick sewer, 84.2 linear feet of 2.75-foot by 4.125-foot brick sewer, 10 manholes, and 24 receiving basins were constructed. Eleven receiving basins were reconstructed. There was also expended from the appropriation for the preservation of public order the sum of \$211.89 for labor and \$396.79 for materials used in erecting rope lines along Pennsylvania avenue March 4, 1897.

The Brookland trunk sewer was completed. Total length of brick sewer constructed, 8,223.9 linear feet, which includes 28 linear feet of bell section, and 16 linear feet of transition section. There was also constructed under the same contract 356 linear feet of 24-inch sewer.

Of the Rock Creek and B street intercepting sewer 5,558 linear feet of brick sewer, 293.2 linear feet of 18-inch, and 931.1 linear feet of 15-inch terra cotta pipe sewers, and 39.4 linear feet of circular brick sewer 30 inches in diameter; 704.2 linear feet of 24-inch and 150 linear feet of 30-inch cast-iron pipe and one wrought-iron truss bridge were constructed. Work is in progress on this sewer.

Of the Fifteenth and F streets portions of the Easbys Point intercepting sewer 2,576.4 linear feet of brick sewer were completed, which includes 48 linear feet of bell section and 152 linear feet of brick sewer connections. Work is in progress on this sewer.

There were received 1,545 communications, and actions were taken on 1,259 papers. In addition 1,258 complaints were received and acted on.

Tables numbered from 1 to 12 are transmitted herewith.

Table No. 1 shows contract work under appropriations for replacing obstructed sewers, main and pipe sewers, suburban sewers, and Fifteenth and F streets portions of Easbys Point intercepting sewer.

Table No. 2 shows work done by day labor under the permit system.

Table No. 3 shows work done by day labor under the assessment system.

Table No. 4 shows work done at whole cost to applicant.

Table No. 5 shows work done by day labor under the appropriation for replacing obstructed sewers.

Table No. 6 shows work done by day labor under the appropriation for main and pipe sewers.

Table No. 7 shows work done by day labor under the appropriation for suburban sewers.

Table No. 8 shows work done under appropriation for flushing basins.

Table No. 9 shows work done by day labor under miscellaneous appropriations.

Table No. 10 shows work done under various contracts for sewers.

Table No. 11 shows number of inspectors, overseers, and other employees of the sewer and property divisions, and engineers' stablers temporarily required, and appropriations from which paid.

Table No. 12 shows average cost per linear foot of sewers constructed by day labor.

Respectfully submitted.

D. E. McCOMB,
Superintendent of Sewers.

Capt. W. M. BLACK,
Corps of Engineers, U. S. A., Engineer Commissioner District of Columbia.

TABLE 1.—Statement of sewers constructed under contracts chargeable to sewer appropriations for the fiscal year 1897.
REPLACING OBSTRUCTED SEWERS.

No. of con- tract.	Contractor.	Location.	Size of sewer.	Length.	Con- tract price [per foot].	Allowance to con- tractor.	Materials fur- nished.		Cost of inspec- tion.	Cost of repairs to pave- ments.	Total cost.
							Charge- able.	Not charge- able.			
284	E. G. Gummel	P street, between Thirty-first and Valley streets NW.	12-inch	Feet. 1,138.05	\$0.92	\$908.97	\$140.00	\$100.12	\$36.00		\$1,245.09
MAIN AND PIPE SEWERS.											
283	E. G. Gummel	A street, between Fourteenth street and Massachusetts avenue SE. B street, between Thirteenth and Four- teenth streets SE. Ninth street, between Virginia avenue and M street SE. Canal street, between N street and Ana- costia River. I street, between First street and Delaware avenue SW. I street, between Delaware avenue and Second street SW. I street, between Second and Third streets SW. Third street, between I and G streets SW. Third street, between G and F streets SW. Third street, between F and E streets SW. E street, between Third and Four-and-a- half streets SW. Third street, crossing E street SW. Four-and-a-half street, crossing E street SW.	21-inch do do 24-inch 5 feet 3 inches di- ameter. 4 feet 9 inches di- ameter. 4 feet 6 inches di- ameter. 3 by 4.50 feet 3.25 by 4.375 feet 3 by 4.50 feet 2.75 by 4.125 feet. 24-inch 21-inch	526.04 498 432.05 634.15 219.17 200.97 489 660.28 311.58 345.72 574.9 33 12	\$1.37 1.34 1.23 1.35	\$960.47 662.42 524.87 787.66	\$81.00 77.00 72.00 123.67	\$195.89 184.34 153.07 312.35	\$28.00 16.00 20.00 60.00		\$975.36 939.76 780.74 1,294.52
284	Jas. McCandlish										
285	R. M. Moore & Co.										
286	Guiney & Coyle	Third street, between F and G streets NE.	24-inch	572.5	1.74	937.50	116.33	293.31	52.00	102.52	1,501.66
287	E. G. Gummel	S street, between Florida and and Connecti- cut avenues NW. Eighth street, between B and C streets SE.	21-inch 15-inch	123.6 505.6	1.57 .96	186.68 496.90	31.00 75.00	47.92 105.51	7.00 48.00		272.60 725.41

SUBURBAN SEWERS.

2323	E. G. Gummel.....	Princeton street, between Sherman avenue and Thirteenth street. Fourteenth Street road, between Center and Park streets.	24-inch..... (2.50 by 3.75 feet... 2.25 by 3.75 feet... 2 by 3 feet... 2 by 3 feet...)	894.13 498.5 243.7 341.65 363.16	\$1.52 4.85 4.22 4.02 4.91	\$1,219.96 7,236.36 1,826.76 2,790.72 7,401.42	\$138.00 2,617.57 524.26 2,790.72 29.85	\$414.51 36.08 11.08 232.33 272.00	\$42.00 182.00 290.00 236.00 60.00	\$1,814.47 10,186.79 2,562.10 611,016.28 1,028.25 (c)
2324	Thos. Buckley.....	Fifth street, between Newark and Omaha streets.	6.55 feet diameter	1,193.3	---	---	---	---	---	---
2325	Jno. J. Shipman.....	Flagler place, between V street and outlet of reservoir sewer.	24-inch	12	1.75	647.32	88.60	232.33	60.00	---
2368	Adam McCandlish..	Whitney avenue, between Fourteenth street and Holmead avenue.	21-inch	591.7	1.15	---	---	---	---	---
2387	Adam McCandlish..	Alley between Richmond and Savannah streets and Minnesota and Brightwood avenues, and on Brightwood avenue, between Quincy and Savannah streets, and on Quincy street, between Brightwood avenue and Eighth street.	18-inch	2,536	1.27	3,057.00	---	---	---	---
2384	E. G. Gummel.....	Woodley road, between Connecticut and Belmont avenues. Connecticut avenue, between Woodley road and Kalorama avenue. Twentieth street, between Woodley road and Kalorama avenue. Illinois avenue, between Brandywine and Flint streets.	24-inch 21-inch 12-inch 12-inch	217 763.36 205.05 1,850	1.41 1.32 .80 ---	1,223.82 156.40 1,336.50	184.91 25.00 ---	383.24 30.88 ---	45.00 8.00 180.00	1,836.97 220.28 (c)
2380	R. M. Moore & Co....									

FIFTEENTH AND F STREETS PORTION OF EASBYS POINT INTERCEPTING SEWER.

2328	Lyons Bros.....	Fifteenth street, between Pennsylvania avenue and F street, between Seventh and Fifteenth streets.	6 feet 6 inches diameter. 6 feet 3 inches diameter. 6 feet 6 inches diameter. 4 feet 6 inches diameter. Bell section. 2 feet 6 inches connection. 3 feet connection. 3 feet 6 inches connection.	743.4 1,064.9 268.1 390 48 40 64 48																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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^a Includes \$2.12 cost of repairing water-service pipe, \$3.48 cost of repairs to pavements over water service, \$10.77 cost of repaving outside line of trench crossing H street on Third street, and resetting curb, and \$4 cost of moving lamp.
^b Cost of lowering 12-inch water main, \$149.19, and cost of changing spring main, \$389.10.
^c Payment on account; work incomplete.

Statement of sewers laid under the appropriation for assessment and

TABLE 2.—PER

No. of order.	Location.	Pipe sewers laid (length in feet)							Manholes.	Basins.	Branches.
		6-inch.	8-inch.	10-inch.	12-inch.	15-inch.	18-inch.	21-inch.			
44	M street, between Fifth and Sixth streets SE.	---	---	---	---	---	---	---	---	---	---
1	Roanoke street, between Thirteenth and Fourteenth streets NW.	---	---	2	---	---	---	---	---	---	1
2	New Hampshire avenue, between S street and Oregon avenue.	---	---	---	20	---	---	---	---	---	1
3	First street, between O and P streets SW.	---	---	---	73	---	---	---	---	---	2
4	Ward Place	---	46	---	---	---	---	---	---	---	5
5	Square 185	---	---	157	---	---	---	---	1	---	5
6	Square 859	---	---	56	---	---	---	---	---	---	2
7	O street, between North Capitol and First streets NE.	---	---	---	---	40	---	---	---	---	2
8	Square 316	---	60	---	---	---	---	---	---	---	3
9	Twenty-second street, between P and Q streets NW.	---	28	---	---	---	---	---	---	---	2
10	Block 4, Ingleside Terrace	9	---	---	---	---	225	---	1	---	---
11	Nineteenth street, between Howard avenue and Piney Branch.	---	---	---	---	177	---	---	1	---	---
12	Howard avenue, between Eighteenth and Nineteenth streets NW.	---	---	---	483	---	---	---	1	---	1
13	Square 736	---	---	---	417	96	---	---	3	---	---
14	do.	---	129	---	---	---	---	---	2	---	9
15	Fourteenth street, between K and L streets NW.	---	---	---	251	---	---	---	1	---	4
16	Square 520	---	---	100	---	---	---	---	---	---	11
17	Square 79	---	---	11	---	---	---	---	---	---	1
18	Potomac street, between N and O streets.	---	---	132	---	---	---	---	2	---	3
19	H street, between Eighth and Ninth streets NE.	---	---	---	17	---	---	---	---	---	1
20	Bunker Hill road for Catholic University	---	---	---	751	---	---	---	2	---	2
21	Potomac street, between N and O streets NW.	---	---	32	---	---	---	---	---	---	1
22	Madison street, between Thirty-fifth and Thirty-sixth streets NW.	---	---	126	---	---	---	---	---	---	3
23	G street, between Sixth and Seventh streets NE.	---	---	45	---	---	---	---	---	---	3
24	Twelfth street, between Hartford and Lansing streets.	---	---	208	---	---	---	---	1	---	5
25	Massachusetts avenue and Sheridan Circle, between Twenty-second and Twenty-third streets.	---	---	---	143	---	---	---	1	---	1
26	Twelfth street, between G and H streets NE.	---	---	20	---	---	---	---	---	---	1
27	North Capitol, between Pierce and M streets.	---	---	134	---	---	---	---	---	---	4
28	R street, between Florida avenue and Twenty-second street NW.	---	---	89	---	---	---	---	---	---	1
29	Square 617	---	---	---	38	---	---	---	---	---	1
30	Fifteenth street, between Rosedale and Gales streets NE.	---	---	---	68	---	---	---	---	---	1
31	Seventeenth street, from Corcoran north.	---	11	---	---	---	---	---	---	---	1
	Total	9	274	1,112	2,261	313	225	---	16	---	79

a Cost of repairs to pavement in addition to cost of work reported in fiscal year, 1896.

b Balance carried forward as deposit for jobs 11 and 12.

permit work and the whole cost to applicant for the fiscal year 1897.

MIT SYSTEM.

Amount of deposit.	Cost to District of Columbia.	Cost to property owner.	Total cost.	Amount re-turned.	For whom done.	Overseer.	Date of completion.
-----	\$4.44	\$4.43	\$8.87	a \$16.20	E. A. Atchison	Ward	Sept. 10, 1896
\$7.50	3.86	3.86	7.72	3.64	Kennedy & Davis.....	Prince	July 10, 1896
22.00	12.44	12.44	24.88	9.56	N. T. Haller.....	Lanigan..	July 11, 1896
56.00	38.75	38.75	77.50	17.25	Fred Deitz	Prince ...	July 17, 1896
43.00	27.26	27.26	54.52	15.74	Jas. H. Grant	do	Sept. 15, 1896
155.00	144.99	144.99	289.98	10.01	Hon. S. B. Elkins	Thomas ..	Sept. 25, 1896
36.00	21.37	21.37	42.74	14.63	D. B. Gottwals	Ward	Sept. 10, 1896
40.00	25.94	25.94	51.88	14.06	Michael Esch.....	do	Sept. 15, 1896
34.50	32.46	32.46	64.92	2.04	D. S. Williamson	do	Oct. 2, 1896
25.00	14.80	14.80	29.60	10.20	J. H. Merriwether.....	Prince	Oct. 7, 1896
821.50	199.74	199.74	399.48	(b)	Chapin Brown	do	Oct. 14, 1896
-----	119.38	119.38	238.76	-----	do	do	Oct. 16, 1896
-----	239.83	239.83	479.66	262.55	do	do	Oct. 22, 1896
514.70	434.90	434.89	869.79	79.81	Jas. Robbins	Ward	Oct. 31, 1896
86.80	67.87	67.87	135.74	18.93	W. H. Yost	do	Nov. 2, 1896
311.00	311.00	311.00	622.00	-----	Dr. F. A. Gardner	Lanigan ..	Jan. 13, 1897
70.00	51.90	51.90	103.80	18.10	Mrs. Annie B. Gaegler.....	Ward	Nov. 4, 1896
10.50	7.43	7.44	14.87	3.06	Jno. Bender.....	Lanigan ..	Nov. 9, 1896
140.00	89.42	89.41	178.83	50.59	Jas. S. Hays.....	Ward	Mar. 13, 1897
15.00	13.20	13.20	26.40	1.80	L. Mackall & Bro	Prince ...	Nov. 25, 1896
597.50	469.32	469.31	938.63	128.19	Rev. P. J. Garrigan.....	Lanigan ..	Jan. 21, 1897
25.00	17.99	17.99	35.98	7.01	J. G. Waters	Ward	Mar. 15, 1897
98.00	91.42	91.42	182.84	6.58	Bates Warren.....	do	Feb. 11, 1897
35.50	35.45	35.44	70.89	.06	A. Goenner.....	do	Mar. 17, 1897
173.50	134.17	134.17	268.34	39.33	Dr. Henry Hyvernatt.....	Lanigan ..	Mar. 22, 1897
130.00	112.59	112.59	225.18	17.41	Mary E. Driggs.....	Ward	Apr. 6, 1897
16.50	14.56	14.57	29.13	1.93	Babbitt & Cowsill	do	May 3, 1897
94.50	70.09	70.09	140.18	24.41	Henry F. Getz	Prince ...	Do.
62.00	39.34	39.34	78.68	22.66	Wm. H. De Lacy.....	Ward	Apr. 15, 1897
30.00	19.49	19.50	38.99	10.50	S. Carr	Prince ...	Apr. 19, 1897
50.00	35.52	35.52	71.04	14.48	R. H. Lamb	Condon ..	June 22, 1897
8.00	5.90	5.91	11.81	(c)	J. R. Marshall.....	Thomas ..	-----
3,709.00	2,906.82	2,906.81	5,813.63	820.73			

c Awaiting bill for repairs to pavements.

Statement of sewers laid under the appropriation for assessment and permit

TABLE 3.—ASSESS

No. of order.	Location.	Pipe sewers laid (length in feet).						
		6-inch.	8-inch.	10-inch.	12-inch.	15-inch.	18-inch.	21-inch.
84	H street, between Connecticut avenue and Seventeenth street NW.	-----	-----	-----	-----	-----	-----	-----
90	Le Roy place, between Columbia road and Phelps place.	-----	-----	-----	-----	-----	-----	-----
94	New Hampshire avenue, between M and N streets NW.	-----	-----	-----	-----	-----	-----	-----
104	N street, between Twenty-first and Twenty-second streets NW	-----	-----	-----	-----	-----	-----	-----
108	Florida avenue, between Quincey and North Capitol streets NW.	-----	-----	-----	-----	-----	-----	-----
110	Florida avenue, between Q and North Capitol streets NW.	-----	-----	-----	-----	-----	-----	-----
1	Florida avenue, between Seventh and M streets NE.	-----	-----	-----	60	-----	-----	-----
2	Florida avenue, between Seventh and Eighth streets NE.	-----	-----	-----	267	-----	-----	-----
3	Florida avenue, between Eighth and Ninth streets NE.	-----	-----	-----	261	-----	-----	-----
4	Square 1208	-----	-----	202	47	-----	-----	-----
5	M street, between Third street and Delaware avenue NE.	-----	-----	-----	216	-----	-----	-----
6	Omaha street, between Fifth and Seventh streets NW.	-----	-----	-----	273	306	-----	-----
7	Florida avenue, between Q and First streets NW.	-----	-----	-----	303	-----	-----	-----
8	Newark street, between Fifth and Seventh streets NW.	-----	-----	-----	-----	333	-----	-----
9	Square 775	-----	-----	-----	282	-----	-----	-----
10	Florida avenue, between Quincey and First streets NW.	-----	-----	130	-----	-----	-----	-----
11	N street, between Ninth and Tenth streets NW.	-----	-----	-----	-----	-----	-----	-----
12	North Carolina avenue, between Thirteenth and Fourteenth streets NE.	-----	-----	211	244	166	-----	-----
13	Gales street, between Sixteenth and Seventeenth streets NE	-----	-----	-----	477	-----	-----	-----
14	Delaware avenue, between N and O streets SW	-----	-----	-----	154	-----	-----	-----
15	Delaware avenue, between H and I streets SW.	-----	-----	-----	220	-----	-----	-----
16	D street, between Seventh and Eighth streets NE.	-----	-----	-----	69	-----	-----	-----
17	I street, between Eighth and Ninth streets SE.	-----	-----	-----	116	-----	-----	-----
18	I street, between Ninth and Tenth streets SE.	-----	-----	-----	197	-----	-----	-----
19	M street, between Thirty-fourth and Thirty-fifth streets NW.	-----	-----	-----	238	-----	-----	-----
20	Thirteenth street, between Clifton and Roanoke streets.	-----	-----	71	-----	-----	-----	-----
21	Irving street, between Thirteenth street and Sherman avenue.	-----	-----	-----	-----	-----	-----	291
22	Roanoke street, between Thirteenth street and Sherman avenue.	-----	-----	-----	-----	-----	270	-----
23	do	-----	-----	-----	-----	201	-----	-----
24	do	-----	-----	-----	194	-----	-----	-----
25	P street, between North Capitol and Florida avenue NE.	-----	-----	-----	182	-----	-----	-----
27	Block south of Levis street, between Bladensburg road and Trinidad avenue.	-----	-----	-----	96	-----	-----	-----
28	Florida avenue, between Connecticut avenue and Twentieth street.	-----	6	146	101	-----	-----	-----
29	Sixteenth street, between Kenesaw avenue and Grant street.	-----	-----	-----	-----	405	-----	-----
30	do	-----	-----	-----	-----	-----	-----	-----
31	Tenth street, between East Capitol street and Massachusetts avenue NE	-----	11	-----	414	-----	-----	-----
32	Washington street, between Pierce and Adams streets.	-----	-----	-----	518	-----	33	-----
33	Jefferson street, between Adams and Taylor.	-----	-----	-----	277	-----	-----	-----
34	Jefferson street, southeast from Taylor	-----	-----	-----	-----	128	-----	-----
35	Tenth street, between I and K streets SE.	-----	-----	-----	235	-----	-----	-----
36	Fourteenth street, between F and G streets NE.	-----	-----	-----	252	-----	-----	-----
37	Twelfth street, between Pennsylvania avenue and E street SE.	-----	85	-----	-----	-----	-----	-----

a Cost of repairs to pavement in addition to cost of work reported in fiscal year 1896.
 b Cost of back filling completed after June 30 in addition to report of 1896.

work and the whole cost to applicant for the fiscal year 1897—Continued.

MENT SYSTEM

Man- holes	Basins.	Branches.	Cost to District of Columbia.	Cost to property owner.	Total cost.	Overseer.	Date of Completion.
			\$39.00	\$38.99	a \$77.99	Thomas	July 11, 1896
			3.28	3.27	a 6.55	Prince	July 2, 1896
			5.75	5.75	a 11.50	do.	July 3, 1896
			30.75	30.75	a 61.50	do.	Sept. 15, 1896
			13.84	13.85	a 27.69	Condon	July 13, 1896
			3.98	3.99	a 7.97	do.	July 11, 1896
1			45.46	45.45	90.91	Lanigan	Aug. 1, 1896
1			150.73	150.74	301.47	do.	Do.
1			147.53	147.52	295.05	do.	July 16, 1896
2		15	136.55	136.55	c 273.10	Prince	July 6, 1896
1			96.67	96.67	193.34	Lanigan	July 3, 1896
3			871.88	871.88	c 1,743.76	Ward	Aug. 21, 1896
2			238.61	238.61	477.22	Prince	July 11, 1896
			487.96	487.96	c 975.92	A. Neville and Ward	July 21, 1896
3	1	6	237.70	237.71	475.41	Ward	July 31, 1896
1		8	75.13	75.13	150.26	Prince	July 20, 1896
1			24.48	24.47	c 48.95	do.	July 11, 1896
3		15	391.06	391.06	782.12	Lanigan	Oct. 6, 1896
3		3	217.59	217.60	435.19	Ward	Sept. 3, 1896
		8	53.32	53.31	106.63	Prince	Jan. 12, 1897
1		8	102.10	102.10	204.20	do.	Jan. 16, 1897
1			42.06	42.06	84.12	do.	Nov. 14, 1896
1		1	61.85	61.85	123.71	do.	Oct. 28, 1896
2		10	144.12	144.13	288.25	do.	Nov. 5, 1896
1		8	209.90	209.89	419.79	do.	Aug. 26, 1896
1		4	51.33	51.33	102.66	Ward	Sept. 30, 1896
2		1	495.71	495.71	991.42	do.	Dec. 17, 1896
1			254.36	254.36	508.72	do.	Dec. 28, 1896
1			188.10	188.10	376.20	do.	Dec. 30, 1896
1		4	154.64	154.63	309.27	do.	Dec. 31, 1896
1		4	93.31	93.32	186.63	do.	Aug. 24, 1896
2		9	111.61	111.60	223.21	do.	Aug. 28, 1896
2		11	185.28	185.28	370.56	Prince	Oct. 16, 1896
2			251.25	251.24	502.49	do.	Sept. 12, 1896
2			218.59	218.58	437.17	do.	Sept. 17, 1896
		1	4.79	4.79	9.58	Ward	Mar. 15, 1897
3		13	392.82	392.82	785.64	Lanigan	Oct. 7, 1896
2		11	225.14	225.15	450.29	do.	Mar. 18, 1897
2		1	93.62	93.62	187.24	do.	Sept. 23, 1896
2		11	172.05	172.05	344.10	Ward	Feb. 18, 1897
2		3	292.34	292.34	404.68	do.	Oct. 5, 1896
1		5	53.72	53.71	107.43	Prince	Mar. 2, 1897

c Work begun in fiscal year 1896, cost of work reported in 1896 to be added to cost of work reported in 1897.

Statement of sewers laid under the appropriation for assessment and permit

TABLE 3.—ASSESSMENT

No. of order.	Location.	Pipe sewers laid (length in feet).						
		6-inch.	8-inch.	10-inch.	12-inch.	15-inch.	18-inch.	21-inch.
38	Seventh street, between K and L streets SE.	.....	.....	122	.....	.....	.....	.....
39	School street, between Grant and Park streets.	.....	.....	.....	308	.....	.....	.....
40	Fifth street, between E and F streets NE.	.....	.....	.....	231	.....	.....	.....
41	Estreet, between Fifth and Sixth streets NE.	.....	.....	188	.....	.....	.....	.....
42	Sixth street, between E and F streets NE.	.....	.....	126	.....	.....	.....	.....
43	Thirteenth street, between E street and Pennsylvania avenue SE.	.....	.....	370	.....	.....	.....	.....
44	Third street, between I and K streets SE.	.....	.....	.....	188	.....	.....	.....
45	Tenth street, between M and N streets SE.	.....	.....	.....	198	.....	.....	.....
46	Florida avenue, between P and Q streets NW.	.....	.....	146	24	.....	.....	.....
47	Fifth street, between G street and Virginia avenue SE.	.....	.....	.....	92	.....	.....	.....
48	Water street, between Tenth and H streets SW.	.....	.....	.....	131	.....	.....	.....
49	Canal street, between C and First streets SW.	.....	.....	169	.....	.....	.....	.....
50	Twelfth street, between G and I streets SE.	.....	.....	162	.....	.....	.....	.....
51	First street, between I and K streets SE.	.....	.....	271	.....	.....	.....	.....
52	F street, between Tenth and Eleventh streets NE.	.....	.....	244	.....	.....	.....	.....
53	Twenty-first street, between N and O streets NW.	.....	.....	.....	193	.....	.....	.....
54	Square 860.	.....	.....	.....	173	.....	.....	.....
55	M street, between Nineteenth and Twentieth streets NW.	.....	.....	.....	298	.....	.....	.....
56	A street, between Seventh and Eighth streets SE.	.....	.....	.....	234	.....	.....	.....
57	Eighth street, between Maryland avenue and E street NE.	.....	.....	141	.....	.....	.....	.....
58	Eighth street, between F and G streets NE.	.....	.....	144	356	.....	.....	.....
59	Ninth street, between F and G streets NE.	.....	.....	150	356	.....	.....	.....
60	Jackson, between Adams and Fendall streets.	.....	.....	.....	.....	306	.....	.....
61	Jackson, between Adams and Fendall streets.	.....	.....	.....	437	.....	.....	.....
62	Harrison street, between Fillmore street and Minnesota avenue.	.....	.....	.....	.....	453	.....	.....
63	Harrison street, between Fillmore street and Minnesota avenue.	.....	.....	.....	297	.....	.....	.....
64	Omaha street, between Fifth street and Illinois avenue.	.....	.....	.....	201	267	.....	.....
65	Fifth street, between L and M streets SE.	.....	.....	384	139	.....	.....	.....
66	Square 743 (Van street).	.....	.....	217	216	.....	.....	.....
67	I street, between Third and Fourth streets SE.	.....	71	.....	.....	.....	.....	.....
68	First street, between M and N streets SE.	.....	.....	120	375	.....	.....	.....
69	Tenth, between M street and public space SE.	.....	.....	193	.....	.....	.....	.....
70	L street, between Eighth and Ninth streets SE.	.....	.....	.....	170	.....	.....	.....
71	P street, between Twenty-first and Twenty-second streets, NW.	.....	.....	.....	119	.....	.....	.....
72	Third street, between N street and Georgia avenue SE.	.....	.....	.....	264	.....	.....	.....
74	Sixth street, between L and M streets SE.	.....	.....	151	.....	.....	.....	.....
75	Thirty-fifth street, between U and Thirty-second streets NW.	.....	.....	.....	244	.....	.....	.....
76	Ninth street, between I and K streets SE.	.....	.....	.....	242	.....	.....	.....
77	G street, between Eleventh and Twelfth streets SE.	.....	.....	.....	132	.....	.....	.....
78	Square 276.	.....	.....	.....	.....	.....	.....	.....
79	Tenth street, between E and F streets SW.	.....	114	77	.....	.....	.....	.....
80	Georgia avenue, between Twelfth and Fourteenth streets SE.	.....	120	73	193	.....	.....	.....
81	Twelfth street, between I and K streets NE.	.....	.....	.....	.....	.....	.....	.....
82	Square 1042.	.....	112	173	.....	.....	.....	.....
83	K street and Georgia avenue, between Twelfth and Thirteenth streets SE.	.....	.....	461	263	.....	.....	.....
84	Florida avenue, between Twelfth and Thirteenth streets NE.	.....	.....	135	180	.....	.....	.....
85	Square 68.	.....	.....	.....	.....	.....	.....	.....
86	Lamar street, between Morgan and Eslin.	.....	.....	118	.....	.....	.....	.....
87	Morgan street, from Lamar southward.	.....	.....	174	.....	.....	.....	.....
88	Second street, between L and M streets SE.	.....	.....	.....	.....	117	.....	.....
89	Thirty-fifth street, between U and Madison streets NW.	.....	.....	287	3	.....	.....	.....
90	Southeast corner Fifteenth and Rosedale streets NE.	.....	.....	9	1,070	.....	.....	.....
91	M street, between Nineteenth and Twentieth streets NW. (south side.)	.....	.....	.....	315	.....	.....	.....

a 200 linear feet 4-inch C. I. connections laid.

b Hard rock found on line of sewer trench, making cost of work exceptionally high.

work and the whole cost to applicant for the fiscal year 1897—Continued.

SYSTEM—Continued.

Man-holes.	Basins.	Branches.	Cost to District of Columbia.	Cost to property owner.	Total cost.	Overseer.	Date of Completion.
1		7	\$63.87	\$63.86	\$127.73	Prince	Mar. 17, 1897
1		7	168.17	168.17	336.34	do.	Sept. 26, 1896
1			134.59	134.59	269.18	Ward	Sept. 12, 1896
1		10	117.47	117.46	234.93	do.	Oct. 2, 1896
1		9	90.25	90.25	180.50	do.	Oct. 3, 1896
1		20	176.36	176.37	352.73	Prince	Mar. 5, 1897
1		13	116.76	116.77	233.53	Ward	Dec. 17, 1896
1		6	112.28	112.27	224.55	do.	Feb. 20, 1897
2		7	145.29	145.28	290.57	Prince	Oct. 6, 1896
1		7	68.24	68.24	136.48	do.	Apr. 10, 1897
2		4	103.21	103.22	206.43	do.	Mar. 10, 1897
1		11	73.34	73.34	146.68	do.	Jan. 18, 1897
2		12	109.21	109.22	218.43	do.	Feb. 9, 1897
2		17	159.31	159.31	318.62	Ward	June 19, 1897
1		14	134.91	134.92	269.83	Prince	Dec. 18, 1896
1		2	110.45	110.45	220.90	do.	Oct. 16, 1896
1		10	84.89	84.89	169.78	do.	Oct. 23, 1896
1		14	231.99	231.99	463.98	Ward	Mar. 2, 1897
2		6	197.43	197.43	394.86	do.	June 25, 1897
1		6	76.31	76.32	152.63	Prince	Dec. 17, 1896
3		19	330.65	330.64	661.29	Ward	Dec. 14, 1896
3		22	317.56	317.57	635.13	do.	Jan. 2, 1897
2		15	342.76	342.75	685.51	Prince	Dec. 29, 1896
2		16	333.69	333.70	667.39	do.	Jan. 2, 1897
2		12	294.51	294.52	589.03	do.	Dec. 7, 1896
2		12	180.88	180.88	361.76	do.	Dec. 9, 1896
2			299.36	299.40	598.79	Lanigan	Oct. 30, 1896
3		23	313.34	313.34	626.68	Ward	Dec. 24, 1896
2		35	212.43	212.44	424.87	do.	May 4, 1897
1		4	50.87	50.87	101.74	do.	June 19, 1897
2		6	246.99	246.99	493.98	do.	May 5, 1897
1		8	107.38	107.37	214.75	do.	May 20, 1897
1		10	112.26	112.26	224.52	do.	May 21, 1897
1		4	203.69	203.69	a 407.38	Lanigan	Jan. 22, 1897
2		15	142.19	142.20	284.39	Ward	June 19, 1897
2		8	102.11	102.10	204.21	Prince	Jan. 12, 1897
1		8	189.20	189.19	378.39	Ward	Mar. 12, 1897
2		16	159.73	159.73	319.46	do.	May 27, 1897
2		3	96.17	96.16	192.33	Prince	June 17, 1897
2		16	192.61	192.60	385.21	Ward	Feb. 10, 1897
1		11	121.91	121.90	243.81	Prince	Mar. 6, 1897
1		11	94.11	94.11	188.22	do.	May 11, 1897
2		6	200.17	200.17	400.34	Ward	May 3, 1897
4		10	181.63	181.64	363.27	Prince	May 19, 1897
4		22	318.22	318.22	636.44	do.	June 18, 1897
4		12	300.63	300.63	601.26	Lanigan	June 23, 1897
1		11	142.06	142.05	b 284.11	do.	Dec. 3, 1896
1		6	76.09	76.09	152.18	Prince	Nov. 13, 1896
2		3	58.67	58.67	117.34	do.	Do.
2		13	194.73	194.73	c 389.46	Ward	May 27, 1897
2		22	697.22	697.23	1,394.45	Loulan	Mar. 12, 1897
2	1		25.86	25.87	51.73	Condon	Dec. 15, 1896
2		12	295.03	295.02	590.05	Ward	Mar. 2, 1897

c Constructed under contract No. 2368, by Adam McCandlish, contractor.

Statement of sewers laid under the appropriation for assessment and permit

TABLE 3.—ASSESSMENT

No. of order	Location.	Pipe sewers laid (length in feet).						
		6-inch.	8-inch.	10-inch.	12-inch.	15-inch.	18-inch.	21-inch.
92	Square 388		74					
93	Square 1055			472				
94	K street, between Sixth and Seventh streets SE.		99					
95	L street, between Fourth and Fifth streets SE.				213	24		
96	C street, between Eleventh and Twelfth streets SE.			236	33			
97	East Capitol street, between Thirteenth and Fourteenth streets SE.				417	231		
98	F street, between Eleventh and Twelfth streets NE.				210			
99	F street, between Twelfth and Thirteenth streets NE.				377			
100	E street, between Eighth and Ninth streets SW.				72			
101	Eleventh street, between M street and Virginia avenue SE.			164				
102	Massachusetts avenue, between Third and Fourth streets NE.				45			
103	Twelfth street, between G and I streets SE.			104				
104	Georgia avenue, between Eighth and Ninth streets SE.			285				
105	I street and Virginia avenue, between Twenty-seventh and Twenty-eighth streets NW.				310			
106	H street, between Eleventh and Twelfth streets NE.			119	182			
107	C street, between New Jersey avenue and First street SE.			149	161	6		
108	K street, between Third and Fourth streets NE.			150	84			
109	Third street, between I and K streets NE.				237			
110	Ninth street, between Providence street and Bunker Hill road.			200				
111	Thirteenth street, between D and E streets SE.			106				
112	Monroe street, between Buchanan street and Navy place.			190				
113	Monroe street, between Navy place and projection of Maple avenue				436			
114	B street, between Sixteenth and Seventeenth streets SE.				328			
115	E street, between Thirteenth and Fourteenth streets SE.				367			
116	G street, between Fourteenth and Fifteenth streets NE.				367			
117	Hartford, between Duncan and Burns streets.			218				
118	Square 1020				3			
119	Washington street, between Fillmore and Pierce streets.				480			
120	Fifth street, between I and K streets (east side) SE.			193				
121	Fifth street, between I and K streets (west side) SE.			66	129			
122	Fifth street, between K and L streets SE.				236			
123	North Capitol street, between Patterson and N streets NE.			163				
124	Thirty-fourth street, between Q and R streets, NW.				316			
125	Spruce street, between Bohrer and Larch streets NW.							
126	G street, between Third and Fourth streets NE.				52			
129	Block 30, Rosedale and Isherwood				160			
130	Twenty-seventh street, between Dumbarton and O streets.				264			
131	Twenty-seventh and O streets NW.							
132	Trinidad street, between Levis and King streets NE.				292			
	Total		607	8,465	18,968	3,063	303	291

a Awaiting bill for repairs to pavements.

b 20 linear feet 4-inch C.I. connections laid.

c Reconstructing basin and lowering manhole to grade.

work and the whole cost to applicant for the fiscal year 1897—Continued.

SYSTEM—Continued.

Man-holes.	Basins.	Branches.	Cost to District of Columbia.	Cost to property owner.	Total cost.	Overseer.	Date of completion.
		7	\$32.91	\$32.91	\$65.82	Prince	Mar. 5, 1897
3		44	283.52	283.53	567.05	do	May 4, 1897
		6	34.20	34.20	68.40	Ward	May 28, 1897
2		9	202.67	202.67	405.34	do	June 7, 1897
2		13	139.29	139.30	278.59	Prince	June 24, 1897
4			352.89	352.89	705.78	do	May 12, 1897
1		9	120.74	120.74	241.48	do	June 23, 1897
2		7	186.02	186.01	372.03	do	Apr. 23, 1897
1		3	63.50	63.50	127.00	do	Mar. 6, 1897
2		7	126.15	126.14	252.29	Ward	June 16, 1897
		3	21.00	21.10	42.19	Lanigan	June 7, 1897
1		7	87.11	87.12	174.23	Prince	Mar. 2, 1897
2		12	165.27	165.27	330.54	Ward	May 29, 1897
2		8	240.55	240.55	481.10	do	May 3, 1897
3		5	250.14	250.13	500.27	do	Do.
3		14	246.44	246.44	492.88	do	June 21, 1897
2		9	161.81	161.81	323.62	Lanigan	Do.
2		3	160.67	160.66	321.33	do	June 3, 1897
1		7	127.68	127.69	255.37	do	May 6, 1897
2		5	101.55	101.56	203.11	Prince	June 18, 1897
1		8	82.22	82.23	a 164.45	do	
2		14	261.63	261.63	a 523.26	do	
2		11	260.04	260.04	a 520.08	Ward	
			55.96	55.96	b 111.92	Prince	May 22, 1897
2		5	193.00	193.00	386.00	Condon	Apr. 26, 1897
2		10	187.85	187.85	375.70	Lanigan	May 15, 1897
			17.45	17.44	c 34.89	Prince	Apr. 19, 1897
2		12	344.55	344.55	689.10	do	June 4, 1897
1		11	98.62	98.62	197.24	Ward	June 29, 1897
2		3	144.30	144.30	288.60	do	June 16, 1897
1		4	129.91	129.91	259.82	do	June 18, 1897
1		8	102.75	102.75	205.50	Lanigan	June 10, 1897
2		5	223.30	223.31	a 446.61	do	
			31.20	31.20	d 62.40	do	June 15, 1897
		2	34.15	34.15	68.30	do	June 23, 1897
1		5	106.65	106.66	213.31	do	June 26, 1897
2		18	187.05	187.05	374.10	Prince	June 30, 1897
			8.10	8.11	a e 16.21	do	
2		14	204.40	204.40	f 408.80	Ward	
201	2	1,043	22,166.37	22,166.38	44,332.75		

d 105 linear feet 4-inch C. I. connections laid.
e Adjusting basins.
f Work completed in fiscal year 1898.

Statement of sewers laid under the appropriation for assessment and permit

TABLE 4.—

No. of order	Location.	Pipe sewers laid (length in feet).						
		6-inch.	8-inch.	10-inch.	12-inch.	15-inch.	18-inch.	21-inch.
1	H street, between Fourth and Fifth streets NE.	.....	20	.....	.....	.....	.....	.....
2	P street, between Eighth and Ninth streets NW.	.....	.....	.....	41	.....	.....	.....
3	Front of No. 2200 Q street NW	.....	.....	.....	3	.....	.....	.....
4	Square 1039	.....	115	.....	.....	.....	.....	.....
5	Pennsylvania avenue, between Sixth and Seventh streets NW.	.....	.....	.....	.....	.....	.....	3
6	Square 756	.....	14	.....	.....	.....	.....	.....
7	Square 413 and Eighth street, between F and G streets SW.	.....	73	.....	.....	.....	.....	.....
8	Fourteenth and F streets NW	.....	.....	.....	.....	.....	.....	.....
9	D street, between Sixth and Seventh streets NE., rear of No. 608 Maryland avenue.	.....	.....	.....	3	.....	.....	.....
10	Twelfth street, between G and I streets SE.	.....	.....	11	.....	.....	.....	.....
11	Fifteenth street, between S street and Pierce place NW.	.....	86	.....	.....	.....	.....	.....
12	Princeton, crossing Fourteenth street NW.	.....	.....	66	.....	.....	.....	.....
13	S street, between Sixth and Seventh streets NW.	.....	60	.....	.....	.....	.....	.....
14	Thirteenth and Harvard	.....	.....	.....	.....	.....	.....	.....
15	Connecticut avenue, between Florida avenue and Le Roy place.	.....	.....	.....	.....	.....	.....	.....
Total.....		.....	368	77	47	.....	.....	3

a Replacing length of pipe tapped through error of plumber.*b* Constructing drain for telephone company manhole. Work was performed by Lyons Bros. in connection with their work under contract No. 2328.

work and the whole cost to applicant for the fiscal year 1897—Continued.

WHOLE COST.

Manholes built.	Basins built.	Branches used.	Amount of deposit.	Cost to property owner.	Amount returned	For whom done.	Overseer.	Date of completion.
		1	\$24.00	\$16.55	\$7.45	J. N. Sterzer.....	Lanigan ...	July 16, 1896
1		1	110.00	75.45	34.55	Jno. C. White	Prince	Aug. 19, 1896
			3.80	a 3.80		Edw. H. Tompkins...	do	Do.
1		8	162.00	129.26	32.74	L. M. Saunders.....	Ward	Oct. 6, 1896
			3.12	b 3.12		A. S. Dent.....	Thomas	Oct. 3, 1896
		1	24.00	23.98	.02	Bernard Walls.....	Condon	Dec. 16, 1896
1		2	158.00	95.21	62.79	Geo. W. Hall.....	Prince	May 31, 1897
			25.00	9.70	15.30	Ches. & Poto. Tel. Co.	French.....	Apr. 21, 1897
			3.92	c 3.92		Peter Daly.....	Prince	Apr. 10, 1897
		1	18.00	12.62	5.38	Nils Molin	do	Apr. 29, 1897
1		1	143.00	120.36	22.64	D. M. McPherson	Condon	June 25, 1897
			182.00	131.87	50.13	C. A. Didden	do	June 29, 1897
1		3	80.00	67.07	12.93	Louis A. Sievers.....	do	June 19, 1897
			15.00		6.13	F. T. Sanner.....	Thomas	May 29, 1897
				d 69.66		Met. R. R. Co.....	Condon	June 22, 1897
5		18	951.84	771.44	250.06			

c Pumping out pond.

d Reconstructing manholes, charged to general deposit.

Work done by day labor under various

TABLE 5.—REPLACING

No. of order.	Location.	Pipe sewers laid (length in feet.)							
		6-inch.	8-inch.	10-inch.	12-inch.	15-inch.	18-inch.	21-inch.	24-inch.
1	M street, between Four-and-a-half and Sixth streets SW.	15				291			
2	S street, between Sixth and Seventh streets NW.	9						234	
3	S street, between Sixth and Seventh streets NW.	24			145		117		
4	Square 337.	45			274				
6	West side Third street, between P and Q streets NW.	54			295		45		
8	West side Eighth street, between B and C streets SW.	18			327				
9	East side Four-and-a-half street, between C and D streets SW.	48			287				
10	Square 398.	102			245				
11	Crossing, P street, between Eighth and Ninth streets NW.					69			
12	Square 397.	111				373			
13	R street, between Seventeenth and Eighteenth streets NW.	10						251	
14	R street, between Seventeenth and Eighteenth streets NW.	6					251		
15	R street, between Seventeenth and Eighteenth streets NW.	8			255				
18	N street, between Four-and-a-half and Sixth streets SW.	17		e 9		196			
19	Four-and-a-half street, between N and O streets SW.	81		397	152				
20	F street, between Nineteenth and Twentieth streets NW.	39			48	66	415		
21	F street, between Twentieth and Twenty-first streets NW.	108			408				
22	Florida avenue, between Seventh and Eighth streets NW.	30			259				
23	Washington circle, between Twenty-third street and Pennsylvania avenue.	3		19					
24	Twenty-seventh street, between I and K streets NW.	19	30				175		
25	Intersection of Second and M streets SE.					27			
26	I street, between Four-and-a-half and Sixth streets SW.	6				166			
27	Eleventh street, between D and E streets SE.	60				382			
28	N street, between Four-and-a-half and Sixth streets SW (south side).	21				454	12		
29	Four-and-a-half street, between N and O streets SW.	111		525		12			
30	O street, between Four-and-a-half and Sixth streets SW.	30				238			
31	Thirteen-and-a-half street, between B and C streets SW.	69			445				
32	N street, between Twenty-second and Twenty-third streets NW.				48	60			216
33	Square 364.	102			44	214	168		
35	South side G street, between Sixth and Seventh streets SW.	51				56	370		
36	Crossing G street, between Sixth and Seventh streets SW.	6		87	60	114			
38	West side Sixth street, between F and G streets SW.	9			60				
41	East side Tenth street, crossing T street NW.						51		
	Total	1,212	30	1,037	3,352	2,718	1,604	485	216

NOTE.—Six inch pipe used in making house connections

a The net cost of sewer is determined by deducting the cost of repairs to pavement plus the cost of connections from the total cost.

b Cost of plumbing work, reconnecting No. 1528 Third street.

c Awaiting bill for repairs to pavements.

d Cost of repairing connection and water service pipe.

e Nine linear feet basin connection.

sewer appropriations, fiscal year 1897.

OBSTRUCTED SEWERS.

House connections made.	Total relaid.	Manholes.	Basins.	Branches	Cost of materials.	Cost of labor.	Cost of repairs to pavements.	Total cost.	Cost of connections.	Net cost of sewers. ^a
6	297	1	-----	15	\$116.13	\$399.01	\$34.38	\$549.52	\$9.14	\$506.00
4	240	3	-----	6	152.68	458.12	7.78	618.58	34.57	576.23
7	296	1	-----	11	105.13	355.39	12.64	473.16	17.40	443.12
20	322	1	-----	17	104.13	651.82	56.25	812.20	78.82	677.13
13	350	2	-----	14	137.60	590.02	b 9.50	c 737.12	-----	727.62
5	371	3	-----	9	139.33	354.00	-----	493.33	4.31	489.02
13	295	2	-----	13	113.86	307.84	d 3.80	425.50	21.69	400.01
32	255	2	1	28	126.73	466.80	77.55	671.08	82.68	510.85
-----	70	1	-----	-----	37.48	131.61	27.16	196.25	-----	169.09
53	471	3	3	50	248.84	988.13	128.93	1,365.90	156.64	1,080.33
5	250	1	-----	10	156.63	476.35	-----	632.98	11.03	621.95
4	256	1	-----	4	128.41	397.56	29.15	555.12	-----	525.97
3	250	2	-----	3	96.47	391.24	11.47	499.18	26.46	461.25
4	199	2	-----	5	100.64	327.85	29.45	457.94	16.20	412.29
20	562	4	-----	27	190.55	653.32	55.16	899.03	f 84.50	759.37
10	538	3	-----	11	208.28	805.86	116.08	1,220.22	g 214.46	889.68
22	413	2	-----	24	145.31	489.28	101.41	736.00	43.37	591.22
8	259	2	-----	8	95.88	412.77	46.33	554.98	16.74	491.91
1	22	-----	-----	2	5.21	22.93	2.23	30.37	-----	28.14
4	202	1	-----	11	108.91	349.45	-----	458.36	h 57.33	401.03
-----	29	1	-----	-----	25.02	46.26	-----	c 71.28	-----	71.28
5	168	-----	-----	5	63.54	222.05	22.02	307.61	7.90	277.69
10	392	2	-----	14	162.39	441.50	59.46	663.35	i 43.54	560.35
14	473	2	-----	16	210.56	576.01	14.68	801.25	21.93	764.64
19	553	4	-----	27	201.81	647.34	j 86.20	935.35	53.28	795.87
9	243	1	-----	9	108.06	299.96	32.01	439.43	13.55	393.87
21	451	1	-----	23	146.99	607.88	48.91	803.78	42.11	712.76
-----	323	4	-----	-----	249.96	785.13	70.42	c 1,105.51	45.82	989.27
44	426	4	1	42	206.32	1,029.58	-----	c 1,295.90	96.60	1,199.30
15	440	2	-----	15	253.06	727.13	-----	c 980.19	26.14	954.05
-----	265	2	-----	3	92.21	320.12	-----	c 412.33	-----	412.33
3	-----	-----	-----	3	16.65	92.92	-----	109.57	-----	109.57
-----	52	1	-----	-----	37.39	115.26	-----	c 152.65	-----	152.65
374	9,703	61	5	425	4,442.16	14,939.89	1,082.97	20,465.02	1,226.21	18,155.84

f Includes \$34.87, cost of extra manhole.

g Includes \$144.23, cost of connecting sewers in east and west side of Twentieth street.

h Includes \$23.24, cost of connecting sewers in alley.

i Includes \$4.33, cost of new bottom in old manhole.

j Includes \$6.15, cost of repairing water service pipes.

k Work completed in fiscal year 1898.

Work done by day labor under various sewer

TABLE 6.—MAIN AND

No. of order.	Location.	Pipe sewer laid (length in feet).				
		6-inch.	8-inch.	10-inch.	12-inch.	15-inch.
1	I street, between Twelfth and Thirteenth streets SE. <i>a</i>					124
2	Square 965 <i>b</i>			6	12	129
4	Square 835 <i>c</i>			3		
5	Crossing, I street, between Third and Fourth streets NE. <i>d</i>					
6	Thirteenth street, between C and D streets SE. <i>c</i>				156	222
7	First street, between O and P streets NW				255	
9	M street, between Thirty-fifth and Thirty-sixth streets NW					
10	Crossing, Thirteenth street, between South Carolina and Kentucky avenues SE					45
11	First street, between O and P streets SW					
12	Intersection of Twelfth and O streets SE					
13	G street between Pennsylvania avenue and Fourteenth street SE					
14	G street and Pennsylvania avenue, between Thirteenth and Fourteenth streets SE					378
15	I street, between Twelfth and Thirteenth streets SE				205	127
16	NW. corner Third and C streets SW				3	
17	NE. and SE. corners Twenty-fifth and N streets NW			9		
20	NE. corner First and Heckman streets SE				21	
21	E street, between Seventh and Eighth streets NE					286
22	Across intersection North Carolina avenue and Fourteenth street NE					135
23	Fifth street, between G street and Virginia avenue SE				57	
24	N street, between Third and Four-and-a-half streets SW			94		
25	NW. corner Eighteenth street and Riggs place NW				6	
26	NE. corner Florida avenue and Quincy street NW				18	
27	SW. corner Florida avenue and Q street NW					
28	NE. corner Delaware avenue and M street NE					
29	NE. corner Fourth and M streets NE			30		
30	NW. corner Fourth and M streets NE			15		
31	NE. corner Fifth and M streets NE			15		
32	NE. corner Sixth and M streets NE			3		
33	Scott avenue, between Brightwood and Warder avenues			3		
34	Fourteenth street, between B and C streets SE			6		
35	NW. corner Thirteenth street and Columbia road NW				18	
36	NW. corner Thirteenth and Clifton streets NW				30	
37	NE. corner Sherman avenue and Harvard street					
38	NW. corner Sherman avenue and Harvard street				18	
39	NE. corner Sherman avenue and Princeton street				21	
40	NW. corner Sherman avenue and Princeton street				24	
41	NE. corner Bismark street and Sherman avenue				27	
42	NW. corner Sherman avenue and Bismark street				21	
43	NE. corner Sherman avenue and Irving street				24	
44	SW. corner Thirteenth and Princeton streets NW				48	
					36	

a Work begun in fiscal year 1896.*b* Filling pond.*c* Repairing flume (Hill's).

appropriations, fiscal year 1897—Continued.

PIPE SEWERS.

Pipe sewer laid (length in feet).			Man-holes.	Basins.	Branches.	Cost of material.	Cost of labor.	Cost of repairs to pavements.	Total cost.
18-inch.	21-inch.	24-inch.							
			1	1	8	\$42.97	\$70.41		\$113.38
				1		78.73	188.30		267.03
						16.25	22.75		39.00
	66		1			58.30	141.18		199.48
			3			152.79	363.37		516.16
			1		9	87.55	260.79		348.34
258			2		6	142.13	441.77		583.90
			1			29.37	64.42		93.79
			1			14.47	17.19		31.66
							196.37		<i>b</i> 196.37
383			2		4	193.11	397.75	\$35.99	626.85
			2		3	158.35	314.48	36.37	509.20
			2		22	131.77	247.74		379.51
				1		31.79	28.50		60.29
				2		61.71	59.93		121.64
				1		36.45	30.31		66.76
			2		5	130.33	277.26		407.59
			1			61.62	135.13		196.75
						14.29	38.98	5.13	58.40
			1		2	32.52	105.09		<i>c</i> 137.61
				1		31.47	31.25		62.72
				1		34.26	27.62		61.88
				1		29.41	29.05		58.46
				1		37.49	28.36		65.85
				1		23.34	38.83		62.17
				1		23.19	32.22		55.41
				1		20.41	33.98		54.39
				1		31.39	34.63		66.02
				1		17.26	26.87		44.13
			1			19.09	49.73		68.82
				1		21.90	41.37		63.27
				1		29.09	27.56	2.40	59.05
				1		22.02	34.16		56.18
				1		22.06	35.34		57.40
				1		23.70	38.88		62.58
				1		23.74	31.88		55.62
				1		23.30	36.42		59.72
				1		23.14	37.37		60.51
				1		28.19	37.60		65.88
				1		21.48	44.01		65.49

d Hard rock was found in the line of sewer trench, thereby making the cost exceptionally high.

e Awaiting bill, repairs to pavements.

Work done by day labor under various sewer

TABLE 6.—MAIN AND PIPE

No. of order.	Location.	Pipe sewer laid (length in feet).				
		6-inch.	8-inch.	10-inch.	12-inch.	15-inch.
46	SW. corner Thirteenth and Yale streets NW			27		
49	K street, crossing Third street SE					42
50	Sixth street, between E and F streets NE			81		
51	Square 185				144	
52	Massachusetts avenue, between A and East Capitol streets				102	
53	B street, between Thirteenth and Fourteenth streets SE					
54	Square 850					
55	Connecticut avenue, between Q and R streets NW. <i>a</i>					
56	NE. corner Connecticut avenue and Q street NW. <i>b</i>					
57	R street, between Twentieth and Connecticut avenue NW. <i>c</i>					
58	M street, between Thirty-fifth and Thirty-sixth streets NW				3	
59	Eighteenth, N street, and Connecticut avenue NW			30	6	
60	Rhode Island avenue and Metropolitan Branch of B. & O. R. R.					
61	NW. corner Eighteenth and M streets NW				36	
64	SW. corner South Carolina avenue and Thirteenth street SE			42		
65	Intersection of C street and South Carolina avenue SE				33	
66	Twenty-first street, between N and O streets NW				18	
67	Maryland avenue, between Ninth and Tenth streets SW				414	
68	M street, at Florida avenue NE. <i>e</i>					
69	Potomac street (Georgetown)					
70	Thirty-fifth street, from U street, northward				90	33)
71	M street, between Fifth and Sixth, SE					138
72	NW. corner Ninth and I streets SE. <i>g</i>					
73	NE. corner Eighth and I streets SE. <i>h</i>					
74	NE. corner Ninth and I streets SE. <i>i</i>					
75	K street, between Twelfth and Thirteenth streets SE					147
76	Square 68 <i>j</i>				168	
77	Twelfth street, between H and I streets NE					
78	Square 736			3		
79	Ninth street, crossing H street NE					54
80	N street, crossing Canal street SE					
81	NE. corner LeRoy and Phelps places			33		
82	SE. corner Fifteenth and F streets NW				9	
83	Square 804				138	
84	Square 557		58			
85	Twelfth street, between I and G streets SE			134		
86	NW. corner Ninth and B streets NW. <i>k</i>					
88	Fifteenth street, between East Capitol and H streets SE					
89	O street, just west of Thirty-second street				3	
91	Third street, crossing G street NE. <i>d</i>				12	
92	Whitney avenue, between Thirteenth and Fourteenth streets NW. <i>l</i>			93	33	
93	Fourteenth street, between East Capitol and A streets SE. <i>m</i>					
94	Nineteenth street, crossing M street NW. <i>n</i>					
96	E street, between Eighth and Ninth streets SW				107	

a In connection with job No. 8, miscellaneous.*b* In connection with job No. 7, miscellaneous.*c* In connection with job No. 9, miscellaneous.*d* Awaiting bill, repairs to pavements.*e* In connection with job No. 15, miscellaneous.*f* Repairing flame (Hill's).*g* In connection with job No. 22, miscellaneous.*h* In connection with job No. 20, miscellaneous.

appropriations, fiscal year 1897—Continued.

SEWERS—Continued.

Pipe sewer laid (length in feet).			Man-holes.	Basins.	Branches.	Cost of material.	Cost of labor.	Cost of repairs to pavements.	Total cost.
18-inch.	21-inch.	24-inch.							
			1	1		\$35.04	\$46.04		\$81.08
						29.68	66.89	\$19.88	116.45
			1			17.51	54.67	7.37	79.55
						50.23	183.92	60.74	294.89
261			1	1		183.30	315.32		498.62
267			1			132.52	266.35		398.87
			1			12.48	14.43		26.91
						8.08			8.08
						8.08			8.08
						8.08			8.08
			1	1		30.82	54.19		85.01
54		72	1	3		164.37	319.11	31.02	514.50
		36		4		107.46	157.48		264.94
				1		29.00	50.34		79.34
				1		28.13	50.63		78.76
				1		27.43	36.36		63.79
						4.85	17.75	1.42	24.02
			4		18	165.21	291.45		d 456.66
						7.86		7.86	
						30.42	131.51	10.35	f 172.28
			2		9	174.46	397.27	60.81	632.54
			2			76.21	150.48	8.43	235.12
						8.08			8.08
						8.08			8.08
						8.08			8.08
			1			64.62	122.53	19.90	207.05
			1			66.07	359.77	32.09	457.93
407			2		10	214.91	496.34	42.56	753.81
				1		16.03	24.20		40.23
						32.49	53.99	18.09	104.57
3	304	12	1			127.80	322.15	29.05	479.00
				1		38.20	44.74		82.94
				1		22.37	39.81	3.99	66.17
			2	1		75.49	166.05	5.20	246.74
			1		5	24.61	80.86	37.36	142.83
					7	57.83	138.57	11.70	208.10
						6.41			6.41
350			2		4	177.50	363.53		541.03
				1		18.46	36.47	8.84	63.77
	45		1			42.17	107.96	26.41	176.54
			1	4		108.40	275.36		383.76
57		84	1			100.58	199.41		299.99
	21		1			28.41	95.78	12.70	136.89
			1		1	40.14	95.87	10.70	146.71

i In connection with job No. 21, miscellaneous.

j Hard rock was found in the line of sewer trench, thereby making the cost exceptionally high.

k In connection with job No. 6, miscellaneous.

l Includes \$2.50, cost of reerecting gas lamp, and \$2.62, cost of reconnecting No 822 Twentieth street.

m Includes \$3.22, cost of repairing water-service pipe.

n Cost of moving gas lamps.

Work done by day labor under various sewer

TABLE 6.—MAIN AND PIPE

No. of order.	Location.	Pipe sewer laid (length in feet).				
		6-inch.	8-inch.	10-inch.	12-inch.	15-inch.
97	O street, between Twenty - seventh and North streets NW					
98	North street, between O and P, and P street, between North and Rock Creek				36	
100	G street, between Twentieth and Twenty-first streets NW					
104	Twentieth street, between G and H streets NW (east side)				347	
105	Twentieth street, between G and H streets NW (west side) <i>a</i>			215		156
106	H street, between Twentieth and Twenty-first streets NW				60	
107	East side Twentieth street, between H street and Pennsylvania avenue NW. <i>a</i>			250		
108	West side Twentieth street, between H street and Pennsylvania avenue NW. <i>a</i>			321		
109	East side Twenty-first street, between F and G Streets NW. <i>a</i>				141	154
110	West side Twenty-first street, between F and G streets NW. <i>a</i>					24
111	East side Twenty-first street, between H and I streets NW. <i>a</i>			188		120
112	West side Twenty-first street, between H and I streets NW. <i>a</i>			206	6	
114	High street, at junction with Pierce					
115	Southwest and northwest corners Fifth and G streets NE. <i>a</i>				9	48
116	Square 617					
116a	NW. corner Fifth and L streets SE				15	
117	NW. corner Sixth and L streets SE				18	
118	NE. corner Sixth and L streets SE				18	
119	SE. corner Canal and L streets SE				12	
120	NE. corner Public Space and L street SE				9	
121	Seventeenth street, between Seaton V streets NW				97	
122	L street, between Sixth and Seventh streets SE			197	281	
123	Intersection of Jackson and Adams streets. <i>a</i>					33
124	Tenth street, between C and D streets SW. <i>a</i>			82		
125	R street, crossing Florida avenue NW					57
126	I street, between Third and Fourth streets NE					180
127	West side Fifteenth street, crossing G street NE					
128	P street, between North street and Rock Creek				216	
129	East side Fifteenth street, between Rosedale and Gales streets NE				54	
130	NE. corner Seventh and L streets SE. <i>c</i>					
131	Sixth and L streets SE					
132	Square 881					
133	Thirty-fourth street, between N and O streets NW. <i>a</i>			33		
134	G street, from Ninth westward, NW					
135	Square 375					
136	Tenth street, between K and L streets SE				282	116
137	Thirty-fifth street, between N and O and N crossing Thirty-fifth streets. <i>a</i>				17	
138	L street SE, 10 feet west of railroad track into navy yard					
139	NE. corner Twenty-fourth and I streets NW. <i>a</i>			39		
140	SE. corner Twenty-fourth and I streets NW. <i>f</i>					
141	Jackson street, between Taylor and Fendall					
142	SE. corner Sherman and Whitney avenues		27			
143	NE. corner New Hampshire avenue and I street NW			33		
144	Intersection Spring road and Holmead avenue				27	
					15	

a Awaiting bill, repairs to pavements.*b* Includes \$2.50 cost of reerecting gas lamp, and \$2.62, cost of reconnecting No. 822 20th street.*c* In connection with job No. 25, miscellaneous.

appropriations, fiscal year 1897—Continued.

SEWERS—Continued.

Pipe sewer laid (length in feet).			Man-holes.	Basins.	Branches.	Cost of material.	Cost of labor.	Cost of repairs to pavements.	Total cost.
18-inch.	21-inch.	24-inch.							
	310		1		8	\$215.80	\$357.41		\$573.21
18	253		2		11	202.48	331.67	\$23.09	557.24
42	142		2		11	134.92	311.09	91.39	537.40
			2		13	109.16	383.42	43.90	536.48
			2		13	131.70	361.24	24.22	517.16
165			2		3	120.67	321.13	89.42	531.22
			1		8	72.26	264.71	24.72	361.69
			2		12	103.00	361.86	641.84	506.70
		30	2		3	153.41	474.72	26.99	655.12
322	45		3		8	229.59	548.73	75.09	853.41
	33		3		12	158.66	520.23	52.95	731.84
			2		12	103.33	359.52		462.85
	21			1		29.75	46.99		76.74
75			2	2		121.62	248.09		369.71
18			1			22.21	39.12		61.33
				1		21.58	35.44	.30	57.32
				1		22.80	29.09		51.98
				1		22.29	33.00		55.29
				1		20.97	27.10		48.07
				1		19.28	26.24		45.52
			1		5	40.07	135.47	11.01	186.55
			3		8	158.44	457.72		616.16
				1		28.27	54.50	2.58	85.35
					2	17.13	55.82		72.95
			1			33.01	73.94	33.63	140.58
			1			76.25	140.09		216.34
48			1			36.27	64.40	5.33	106.00
					12	57.95	233.98	21.10	313.03
			1			27.50	70.49	3.68	101.67
3			1			6.22			6.22
				1		16.45	29.92		46.37
				1		23.15	29.93		53.08
97	268		1		2	163.31	427.06	d 55.77	646.14
	53		2		3	98.97	295.93	32.00	426.90
			3		28	194.55	648.32	40.88	883.75
					1	5.04	10.05		15.09
273			3		9	175.27	563.57	29.74	768.58
				1		23.07	33.05		56.12
						6.22			6.22
						5.99			5.99
				1		20.49	44.25		64.74
				1		24.36	47.34		71.70
				1		23.04	35.50		58.54
				1		21.54	34.75		56.29

d Includes \$3.22, cost of repairing water-service pipe.

e In connection with job No. 32, miscellaneous.

f In connection with job No. 33, miscellaneous.

Work done by day labor under various sewer

TABLE 6.—MAIN AND PIPE

No. of order.	Location.	Pipe sewer laid (length in feet).				
		6-inch.	8-inch.	10-inch.	12-inch.	15-inch.
145	NW. corner New Hampshire avenue and I streets NW. <i>a</i>					
146	NW. and NE. corners Howard avenue and Piney Branch road			39		
147	SE. corner Third and F streets NE. <i>b</i>				9	
148	SE. corner Fourth and F streets NE					
149	South side G street, between Third and Fourth streets NE. <i>c</i>				138	
150	North side K street, between Fifth and Sixth streets SE					72
151	SW. corner Thirty-first and M streets NW. <i>d</i>					
152	Thirty-Fifth street, between T and U streets NW. <i>c</i>			60		
153	SE. corner Pennsylvania avenue and Ninth streets NW. <i>c</i>					
154	West side Eleventh street SE., near Anacostia bridge					
155	NW. corner Eleventh and O streets SE				6	
156	NW. corner Eleventh and N streets SE				3	
Total			85	2,390	4,132	3,117

TABLE 7.—SUBURBAN

No. of order.	Location.	Pipe sewers laid (length in feet).			
		10-inch.	12-inch.	15-inch.	18-inch.
1	Alley rear of Arthur street (Anacostia)				
3	Q street, between Third and Fourth streets NE				
4	Third street, between Q and R streets NE				84
5	Alley rear of Arthur street (Anacostia)				
7	Gales street, between Sixteenth and Seventeenth streets NE		105		
8	Grant street, between School and Fifteenth streets			468	
9	Intersection of Jefferson and Taylor streets		69		
10	Fifth street, between Omaha and Philadelphia streets				
11	Phelps place, between Bancroft place and California avenue		436		
12	New York avenue between Florida avenue and B. & O. R. R.				
13	Lamar street, between Eslin and Morgan streets		186		
14	Eighth street, between Lowell and Milwaukee streets				
15	Seventh street, between Milwaukee street and Bunker Hill road				
16	Milwaukee street, between Seventh and Eighth streets				
17	Whitney avenue, between Holmead avenue and Fourteenth streets				
18	Hartford street, between Ninth and Tenth streets NE		255		
19	Hartford street, between Tenth and Twelfth streets NE				457
20	Frankfort street, between Tenth and Twelfth streets NE				452
21	Frankfort street, between Ninth and Tenth streets NE				
22	Providence street, between Tenth and Twelfth streets NE				452
23	Fourteenth street, between Yale and Princeton streets				
24	Morgan avenue, between Lamar and Lydecker avenues	3			270
25	Dover street, between Tenth and Twelfth streets			50	
26	Hartford street, between Duncan and Burns streets				
Total		85	1,051	518	1,715

a In connection with job No. 34, miscellaneous.
b In connection with job No. 36, miscellaneous.
c Awaiting bill, repairs to pavements.

appropriations, fiscal year 1897—Continued.

SEWERS—Continued.

Pipe sewer laid (length in feet).			Man-holes.	Basins.	Branches.	Cost of material.	Cost of labor.	Cost of repairs to pavements.	Total cost.
18-inch.	21-inch.	24-inch.							
						\$6.22			\$6.22
				2		42.56	* \$78.89		121.45
				1		4.77			4.77
						20.71	42.06		62.77
42			1			79.78	174.99	\$20.27	275.04
253			3		2	179.99	398.55		578.54
						6.22			6.22
			1			26.33	56.81		83.14
						6.00			6.00
	30			1		28.24	37.08		65.32
				1		19.06	35.99		55.05
				1		18.46	30.50	f 4.00	52.96
3,396	1,491	234	103	68	299	8,334.85	19,148.27	1,292.40	28,775.52

SEWERS.

Pipe sewers laid (length in feet).		2.25 by 3.375 brick.	Man-holes.	Branches.	Cost of materials.	Cost of labor.	Cost of repairs to pavements	Total cost.
21-inch.	24-inch.							
75		126.2	1		\$83.26	\$308.40		\$391.66
	195		2		225.73	764.42		990.15
66			1		211.09	613.33		824.42
					103.77	332.29		436.06
					26.99	94.81		121.80
			2	9	188.61	404.55		593.16
			1		31.59	55.53		87.12
381			2		319.10	594.39		913.49
			3	14	152.35	368.31	\$24.34	545.00
315			2		203.04	361.12		564.16
			1		59.74	129.33		189.12
	361			2	276.24	566.94		843.18
279			2		219.66	360.36		580.02
341			1	4	229.02	413.10		642.12
			1	3	68.47	232.64		301.11
397			1	5	189.73	435.39		625.12
			2	8	231.70	450.46		684.16
			1	4	219.19	486.24		705.43
336			1		202.79	568.87		771.66
			2	4	229.59	446.54	g 38.53	714.66
			1		130.27	273.25	46.66	450.18
	283			1	17.88	61.01		78.89
				2	218.05	530.28		748.33
				2	18.03	56.73		74.76
2,100	839	126.2	27	58	3,857.89	8,908.34	109.53	12,875.76

d In connection with job No. 35, miscellaneous.

e In connection with job No. 39, miscellaneous.

f Cost of moving gas lamps.

g Cost of lowering water main, \$36.18; cost of repairing water-service pipe, \$2.35.

Work done by day labor under various sewer

TABLE 8.—FLUSHING BASINS

No. of order.	Location.	Terra cotta pipe (length in feet).		
		6-inch.	8-inch.	12-inch.
1	Square 1026		3	3
2	Connecticut avenue, between N street and Dupont Circle		30	
3	South side N street, east of Third street NW		2	
4	North side P street, east of Eighth street NW	2	11	
5	East side Tenth street, south of S street NW	1	3	22
6	West side Fifteenth street, south of P street NW		3	
7	East side Nineteenth street, south of S street NW		6	
8	Square 368		3	
9	SW. corner Seventh street, North Carolina avenue SE		7	
	Total	3	68	25

TABLE 9.—MISCELLANEOUS APPROPRIATIONS IN FIS

No. of order.	Location.	Pipe sewers laid (length in feet).						
		8-inch.	10-inch.	12-inch.	15-inch.	18-inch.	21-inch.	24-inch.
1	Lansing street, between Queen and Wallace streets.						305	
2	Providence street, between Queen and Wallace streets.							301
3	Lansing street, between Wallace and Duncan streets.					454		
1	Kenesaw avenue, between Sixteenth street and Rock Creek.							
2	Twenty-sixth and M streets, NW							
3	O street, between Twenty-second street and Rock Creek.							
4	do	45						
1	Fifteenth street extended, between Columbia road and Kenesaw avenue.		504					
1	Fifteenth street, between Pennsylvania avenue and F street, and F street east of Fifteenth.							
2	F street, between Fourteenth and Fifteenth streets NW.							
3	F street, between Thirteenth and Fourteenth streets NW.							
1	U street, between Sixteenth and Seventeenth streets NW.		21					
3	NW. corner Seventeenth and U streets NW.			9				
4	NE. corner Seventeenth and U streets NW.			9				
5	NE. corner Florida avenue and U streets NW.			12				
18	South side Florida avenue west of North Capitol street. <i>g</i>							
32	NE. corner Twenty-fourth and I streets NW. <i>h</i>			3				
33	SE. corner Twenty-fourth and I streets NW. <i>i</i>			12				
34	NW. corner New Hampshire avenue and I street NW. <i>j</i>			6				
2	H street, between Fifteenth street and Vermont avenue.		39					
7	NE. corner Connecticut avenue and Q street NW. <i>k</i>							
8	East side Connecticut avenue between Q and R streets NW. <i>l</i>		15					
9	North side R street, between Twentieth street and Connecticut avenue. <i>m</i>		21					
11	NE. corner Eighteenth and M streets NW							
17	Capitol Grounds, near First street, between East Capitol and B streets SE.		15	36				
23	F street, between Nineteenth and Twenty-first streets, and L, between Twelfth and Fourteenth streets. <i>n</i>							

a Includes \$3, cost of tap of water main.

b Repairing flushing basin.

c Includes \$251.13 paid out of appropriation "Suburban sewers."

d Cost of materials and labor furnished by C. A. Schneider's Sons in erecting girder to support water main at M street bridge, and removing temporary bridge.

e Boarding over sewer.

f Boards used in this work were taken from works on Fifteenth street, between Pennsylvania avenue and F street, and on F street, between Fourteenth and Fifteenth streets.

appropriations, fiscal year 1897—Continued.

AND CONNECTIONS.

Branches.	$\frac{1}{2}$ -inch lead pipe.	Solder.	Flushing basins.	Cost of materials.	Cost of labor.	Cost of repairs to pavements.	Total cost.
	<i>Feet.</i>	<i>Pounds.</i>					
-----	61	3	1	<i>a</i> \$67.99	\$79.44	-----	\$147.43
-----	4	1.5	1	<i>a</i> 60.38	97.83	-----	176.58
-----	33.5	2	1	<i>a</i> 56.38	55.23	\$18.37	111.61
1	5.5	1.5	1	<i>a</i> 58.73	76.28	-----	135.01
2	27	2	1	<i>a</i> 59.31	54.12	8.36	121.79
-----	3.5	1.5	1	<i>a</i> 52.56	57.05	-----	110.51
-----	12.5	2	1	<i>a</i> 54.00	57.48	-----	111.48
-----	6	1.5	1	<i>a</i> 57.07	50.24	8.63	124.94
-----	-----	-----	-----	33.26	35.11	-----	68.37
3	153	15	8	499.68	572.68	35.36	1,107.72

CAL YEAR 1897, WORK PERFORMED BY DAY LABOR.

2.50 by 3.75, brick.	2.75 by 4.125, brick.	Manholes.	Basins.	Branches.	Cost of mate- rials.	Cost of labor.	Cost of repairs to pave- ments.	Total cost.	Appropriations.
-----	-----	1	-----	1	\$187.86	\$527.83	-----	\$715.69	Brookland sewer, 1897.
-----	-----	-----	-----	2	228.40	<i>c</i> 544.13	-----	772.53	Do.
-----	-----	1	-----	5	218.25	538.75	-----	757.00	Do.
-----	84.2	1	-----	-----	158.49	640.72	-----	799.21	Kenesaw avenue sewer, 1897.
-----	-----	1	-----	-----	713.00	578.70	<i>d</i> \$319.65	1,611.35	Rock Creek and B street in- tersecting sewer, 1897.
70	-----	1	-----	-----	208.97	760.49	-----	969.46	Do.
-----	-----	-----	-----	-----	9.05	51.73	-----	60.78	Do.
-----	-----	3	-----	15	166.77	514.95	-----	681.72	Fifteenth street extended, between Columbia road and Kenesaw avenue, 1897.
-----	-----	-----	-----	-----	172.84	99.50	-----	<i>e</i> 272.34	Fifteenth and F streets, por- tion Easby's point inter- secting sewer, 1897.
-----	-----	-----	-----	-----	153.09	102.98	-----	<i>e</i> 256.07	Do.
-----	-----	-----	-----	-----	3.50	204.59	-----	<i>e f</i> 208.09	Do.
-----	-----	-----	2	-----	28.22	70.72	-----	98.94	Improvement and repairs, NW section, 1897.
-----	-----	1	-----	-----	33.82	31.37	-----	65.19	Do.
-----	-----	1	-----	-----	33.12	31.63	-----	64.75	Do.
-----	-----	1	-----	-----	34.29	36.65	-----	70.94	Do.
-----	-----	-----	-----	-----	12.09	22.51	-----	34.60	Do.
-----	-----	1	-----	-----	13.52	31.00	-----	44.52	Do.
-----	-----	1	-----	-----	15.58	33.50	-----	49.08	Do.
-----	-----	1	-----	-----	12.50	32.11	-----	44.61	Do.
-----	-----	2	3	-----	73.04	126.97	-----	200.01	Repairs, concrete pavements, 1897.
-----	-----	-----	-----	-----	11.15	39.39	-----	50.54	Do.
-----	-----	-----	-----	-----	14.86	45.62	-----	60.48	Do.
-----	-----	-----	-----	-----	16.17	51.05	-----	67.22	Do.
-----	-----	1	-----	-----	28.60	48.43	-----	77.03	Do.
-----	-----	1	-----	-----	19.76	29.81	-----	49.57	Do.
-----	-----	-----	-----	-----	3.29	15.06	-----	18.35	Do.

g Reconstructing basin.*h* In connection with job No. 139, M. and P.*i* In connection with job No. 140, M. and P.*j* In connection with job No. 145, M. and P.*k* Reconstructing basin in connection with job No. 56, M. and P.*l* Reconstructing basin in connection with job No. 55, M. and P.*m* Reconstructing basin in connection with job No. 57, M. and P.*n* Adjusting manholes.

Work done by day labor under various sewer

TABLE 9.—MISCELLANEOUS APPROPRIATIONS IN FISCAL

No. of order.	Location.	Pipe sewers laid (length in feet).						
		8-inch.	10-inch.	12-inch.	15-inch.	18-inch.	21-inch.	24-inch.
6	NW. corner Ninth and B streets NW. <i>a</i>	-----	-----	15	-----	-----	-----	-----
10	SE. corner M street and entrance to Aqueduct Bridge.	-----	-----	42	-----	-----	-----	-----
13	Thirteenth street, between East Capitol and D streets SE. <i>b</i>	-----	-----	-----	-----	-----	-----	-----
20	NE. corner Eighth and I streets SE. <i>c</i>	-----	-----	21	-----	-----	-----	-----
21	NE. corner Ninth and I streets SE. <i>d</i>	-----	9	-----	-----	-----	-----	-----
22	do. <i>e</i>	-----	33	-----	-----	-----	-----	-----
25	NE. corner Seventh and L streets SE. <i>f</i>	-----	-----	3	-----	-----	-----	-----
27	In front of No. 505 L street SE. <i>g</i>	-----	-----	-----	-----	-----	-----	-----
28	In front of No. 513 L street SE. <i>g</i>	-----	-----	-----	-----	-----	-----	-----
29	In front of No. 511 L street SE. <i>h</i>	-----	-----	-----	-----	-----	-----	-----
30	In front of No. 509 L street SE. <i>h</i>	-----	-----	-----	-----	-----	-----	-----
15	North side M street, at Florida avenue NE. <i>i</i>	-----	-----	30	-----	-----	-----	-----
16	North side P street, at Florida avenue NE.....	-----	-----	30	-----	-----	-----	-----
19	SE. corner Eighth and D streets NE.....	-----	-----	12	-----	-----	-----	-----
36	SE. corner Third and F streets NE. <i>j</i>	-----	-----	3	-----	-----	-----	-----
24	Thirteenth and Harvard streets NW. <i>k</i>	-----	-----	15	-----	-----	-----	-----
24	Thirteenth and Harvard streets NW. <i>l</i>	-----	-----	3	-----	-----	-----	-----
31	Near SW. corner Thirteenth and Princeton <i>m</i>	-----	-----	-----	-----	-----	-----	-----
37	Thirteenth street, between Princeton and Columbia streets. <i>n</i>	-----	-----	-----	-----	-----	-----	-----
38	Connecting lot 24, block 34, Columbia Heights, with sewer.	-----	51	-----	-----	-----	-----	-----
39	SE. corner Pennsylvania avenue and Ninth street NW. <i>o</i>	-----	-----	-----	15	-----	-----	-----
35	SW. corner M and Thirty-first streets NW. <i>p</i>	-----	-----	3	-----	-----	-----	-----
36	Sixth street, crossing L street. SE. <i>q</i>	-----	-----	-----	-----	-----	-----	-----
	Pennsylvania avenue, between First and Seventeenth streets NW. <i>s</i>	-----	-----	-----	-----	-----	-----	-----
	Total.....	45	768	264	15	454	305	301

a In connection with job No. 86, M. and P.*b* Adjusting manholes.*c* Reconstructing basin in connection with job No. 73, M. and P.*d* Reconstructing basin in connection with job No. 74, M. and P.*e* Reconstructing basin in connection with job No. 72, M. and P.*f* Reconstructing basin in connection with job No. 130, M. and P.*g* 17 linear feet 4 inches C. I. connections laid.*h* 16.5 linear feet 4 inches C. I. connections laid.*i* In connection with job No. 68, M. and P.*j* In connection with job No. 147, M. and P.

appropriations, fiscal year 1897—Continued.

YEAR 1897, WORK PERFORMED BY DAY LABOR—Continued.

2.50 by 3.75, brick.	2.75 by 4.125, brick.	Manholes.	Basins.	Branches.	Cost of mate- rials.	Cost of labor.	Cost of repairs to pave- ments.	Total cost.	Appropriations.
			1		\$17.52	\$40.61		\$58.13	Current repairs, streets, ave- nues, and alleys, 1897.
			1		21.65	56.74		78.39	Improvement and repairs, Georgetown section, 1897.
					6.46	21.87		28.33	Improvement and repairs, SE section, 1897.
					16.98	43.37		60.35	Do.
					13.89	37.97		51.86	Do.
					18.79	42.06		60.85	Do.
					12.13	27.64		39.77	Do.
			1		4.28	7.68		11.96	Do.
			1		4.05	7.50		11.55	Do.
			1		3.98	6.67		10.65	Do.
			1		3.98	6.71		10.69	Do.
			1		20.31	43.12		63.43	Improvement and repairs, northeast section, 1897.
			1		19.75	32.87		52.62	Do.
			1		13.85	33.92		47.77	Do.
			1		22.46	26.86	\$9.77	40.09	Do.
					34	72.19		101.53	Yale street, 1897.
					91	14.96		21.87	Do.
					94	22.93		32.87	Do.
					2	2.60		5.10	Do.
					0	61.55		72.64	Repairs county roads, 1897.
			1		21	45.69		62.90	Replacing sidewalks and curbs around public res- ervations, 1897.
					11.84	24.87		36.73	Improvement and repairs, Georgetown section, 1897.
					259.64	811.39	r 16.06	1,087.09	Cleaning and repairing sew- ers and basins, 1897.
					211.89	396.79		608.68	Preservation of public order, February and March, 1897.
70	87.2	10	24	23	329.50	7,098.84	336.48	10,755.92	

k Reconstructing basins southwest and northwest corners.

l Adjusting basins northeast and southeast corners.

m Adjusting basin; awaiting bill for repairs to pavements.

n Raising manholes to grade.

o In connection with job No. 153, M. and P.; awaiting bill for repairs to pavements.

p Reconstructing basin in connection with job No. 151, M. and P.

q Repairing 4 foot 3 inch sewer in Sixth street SE.

r Cost of moving water main.

s Roping of Pennsylvania avenue, cost of materials estimated.

TABLE 10.—*Sewers constructed under various contracts, chargeable to various sewer*

No. of contract.	Contractor.	Location.	Size of sewer.	Length.
2005	A. C. Chenoweth	Fifteenth street, between B and C streets NE. Fifteenth street crossing, B street NE. B street, between Fifteenth street and North Carolina avenue NE. North Carolina avenue, between B and Fourteenth streets NE. Fifteenth street, between A and B streets NE. Fifteenth and B streets NE	2.75 by 4.125 feet 2.25 by 3.375 feet 3 by 3 feet 2.25 by 3.375 feet Bell section.....	<i>Feet.</i> 524.34 56.1 365.85 799.5 8
2232	H. C. Bolden	Georgia avenue, between Sixteenth and Seventeenth streets SE. Seventeenth street, between Georgia avenue and E street SE.	3.5 by 5.25 feet 3.25 by 4.875 feet 2.75 by 4.125 feet 2.25 by 3.375 feet	660 459.25 454.75 241.3
2238	Jas. McCandlish	I street SW, between Delaware avenue and James Creek Canal.	5.25 feet diameter	579.2
2231	Lyons Bros	Fifteenth street extended, between Kenesaw avenue and Grant street.	2.50 by 3.75 feet	571.65
2214	Andrew Gleeson	Kenesaw avenue, between Rock Creek and Sixteenth street. Fifth street NE, between T street and Rhode Island avenue. Rhode Island avenue, between Fifth and Ninth streets NE. Rhode Island avenue and Albany street, between Fourth and Fifth streets. Ninth street, between Rhode Island avenue and Franklin street. Ninth street, between Franklin and Hartford streets. Ninth street, between Hartford and Indianapolis streets. Ninth street, between Indianapolis and Joliet streets. Ninth street, between Joliet and Frankfort streets. Ninth street, between Frankfort and Lansing streets. Ninth street, between Lansing and Providence streets. Eighth street, between Keokuk and Lowell streets. Keokuk street, between Eighth and Ninth streets. Dover street, between Ninth and Tenth streets.	2.75 by 4.125 feet Bell section..... 8 feet diameter..... 6 feet 6 inches diameter..... 5 feet 9 inches diameter..... 8 feet 6 inches diameter..... Transition section .. 5 feet 9 inches diameter..... 4 by 6 feet..... 3.75 by 5.625 feet 3.50 by 5.25 feet Bell section..... 3.25 by 4.875 feet 3 by 4.50 feet..... 24-inch pipe..... 2.25 by 3.375 feet 2.50 by 3.75 feet 2.50 by 3.75 feet	2,306.6 20 1,087.6 1,108.6 800.7 429.75 16 1,198.1 675.9 360.8 360.8 8 300.85 796 350 280.8 407.5 377.5
2217	T. M. Leshner & Son			
2220	Jno. Jacoby		6 feet diameter..... Bell connection..... 18-inch..... 15-inch..... 30-inch brick..... 24-inch C. I. pipe..... 30-inch C. I. pipe..... Wrought-iron truss bridge..... 2.75 by 4.125 feet	5,558 24 263.2 931.1 39.4 704.2 150 1 8,609.4
2050	Jas. McCandlish	Rock Creek Valley, between Woodley Road and Piney Branch.	Bell section..... Sediment chamber..... Overflow section..... 3-foot section..... 30-inch C. I. pipe..... 10 feet diameter.....	18 60 20 24 512 92.8
2223	Jno. Jacoby	Slash Run sewer, between New Hampshire avenue and N street.		

^a This report includes work accounted for in annual report of the fiscal year 1896.

^b Work incomplete; payment made on account.

^c Includes \$91.56, cost of repairing water-service pipes, and \$77.07, cost of raising railroad tracks at M street bridge.

OPERATIONS OF THE ENGINEER DEPARTMENT, D. C. 101

appropriations for the fiscal years 1895 and 1896, completed in fiscal year 1897.

Contract price per foot.	Allowance to contractor.	Materials furnished.		Cost of inspection.	Cost of repairs to pavements.	Total cost.	Appropriation.
		Chargeable.	Not chargeable.				
\$3.98 3.59 3.23 3.71	\$3,888.03	\$2,455.87	\$33.74	\$1,749.00	-----	a \$8,076.64	{Main and pipe sewers, 1896.
-----	8,075.57	2,709.69	25.85	432.00	-----	9,243.11	Do.
-----	3,094.03	822.12	10.22	234.00	\$35.35	4,195.72	Do.
4.54	2,016.88	789.70	5.76	121.50	-----	2,933.84	Suburban sewers, 1896.
4.19	8,753.35	3,238.50	31.93	813.07	-----	a 12,836.85	Kenesaw avenue sewer, 1896 and 1897.
-----	53,218.20	15,629.18	327.84	2,943.66	-----	a 72,118.88	{Brookland sewer, 1896 and 1897.
-----	a 677,713.24	-----	-----	4,527.35	e 417.79	-----	{Rock Creek and B street intersecting sewer.
-----	47,231.92	11,355.15	371.46	4,475.75	d 24.50	e 63,458.78	{Rock Creek intersecting sewer.
-----	537.75	225.40	-----	52.00	-----	f 815.15	Cleaning and repairing sewers and basins, 1896.

d Cost of rolling roadway over sewer.

e This report includes work accounted for in annual reports of the fiscal years 1895 and 1896.

f Repairing bottom of sewer.

102 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

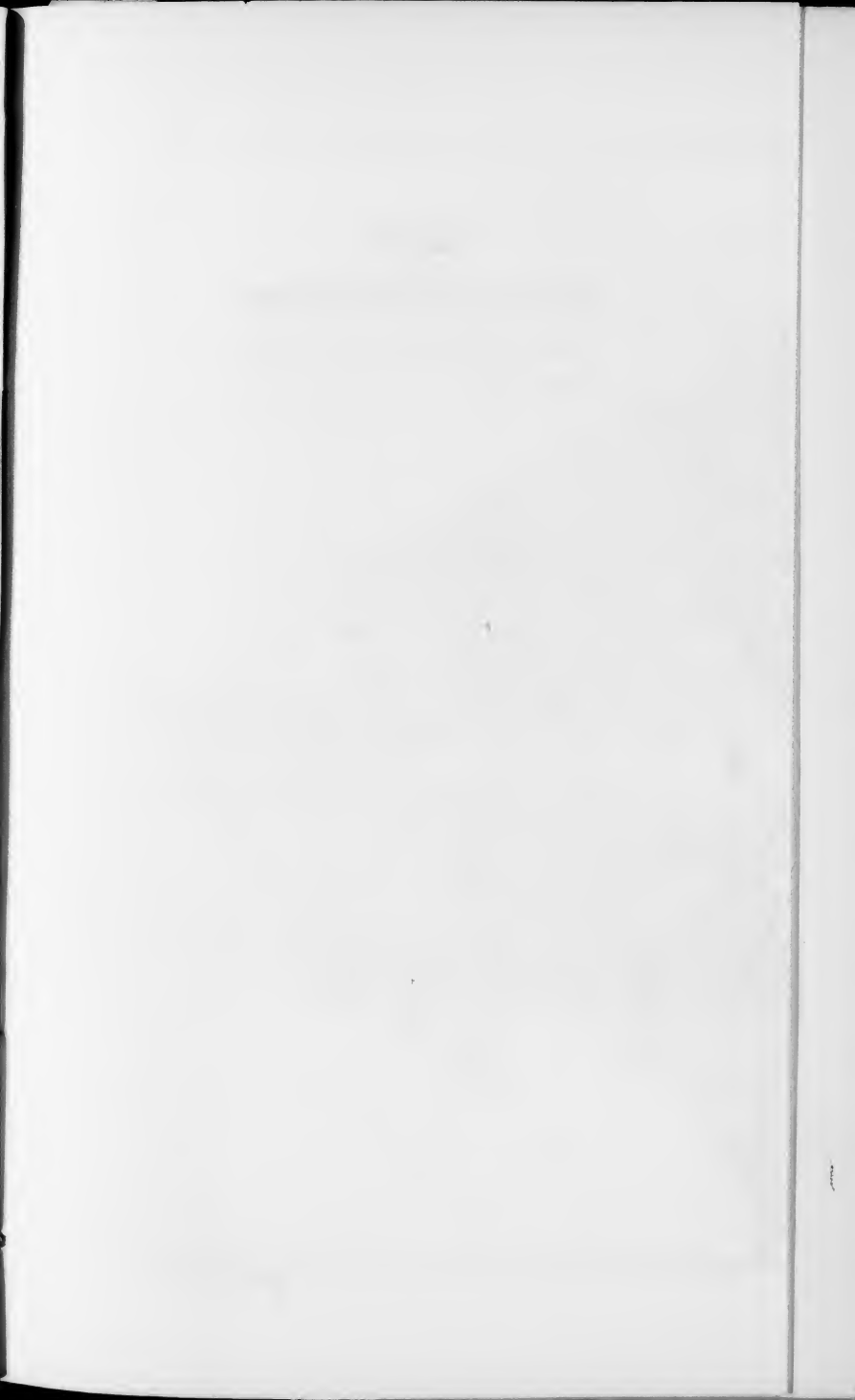
TABLE 11.—Number of inspectors, foremen, and other employees of the sewer and property divisions and engineers' stables temporarily required, and appropriations from which paid, for the year ended June 30, 1897.

Class.	Number employed.	Cleaning and repairing sewers and basins.	Replacing obstructed sewers.	Main and pipe.	Suburban sewers.	Fifteenth and F streets sewers.	Rock Creek and B street interceptor.
Foremen.....	12	\$5,091.67	\$944.50	\$1,339.00	\$645.50	\$30.00	\$135.50
Inspectors.....	18	243.00	36.00	2,121.00	1,366.50	1,451.11	2,642.00
Other employees.....	457	29,198.13	14,816.01	22,313.98	11,283.11	1,169.08	3,793.86
Total.....	487	34,532.80	15,796.51	25,773.98	13,295.11	2,590.19	6,571.36

Class.	Rock Creek interceptor.	Brook-land sewer.	Kenesaw avenue sewer.	Fifteenth street extended, between Columbia road and Kenesaw avenue.	Eckington valley sewer.	Repairs, concrete pavements.	Improvements and repairs, Georgetown.
Foremen.....		\$126.00	\$48.00	\$32.00		\$30.00	\$10.00
Inspectors.....	\$176.00	1,477.00					4.00
Other employees.....		4,285.04	637.98	482.95	\$270.00	326.33	67.61
Total.....	176.00	5,888.04	685.98	514.95	270.00	356.33	81.61

Class.	Improvements and repairs northwest section.	Improvements and repairs northeast section.	Improvements and repairs southeast section.	Current repairs streets, avenues, and alleys.	Yale street, etc.	Retain, contract No. 2214.	Emergency fund.
Foremen.....	\$21.00	\$12.00	\$16.00	\$4.00	\$9.00	\$4.50	\$8.50
Inspectors.....	15.00	4.00	9.00		8.00		
Other employees.....	253.49	120.77	176.47	36.61	95.77	13.55	43.44
Total.....	289.49	136.77	201.47	40.61	112.77	18.05	51.94

Class.	Automatic siphons.	Preservation of public order, February and March.	Repairs to county roads.	Replacing sidewalks and curbs around public reservations.	Assessment and permit work.	Deposits.	Grand total.
Foremen.....		\$53.25		\$8.00	\$1,932.00	\$45.00	\$10,545.42
Inspectors.....	\$119.00				111.00		9,782.61
Other employees.....	453.68	343.54	\$61.55	37.69	30,688.68	491.40	121,400.72
Total.....	572.68	396.79	61.55	45.69	32,731.68	536.40	141,728.75



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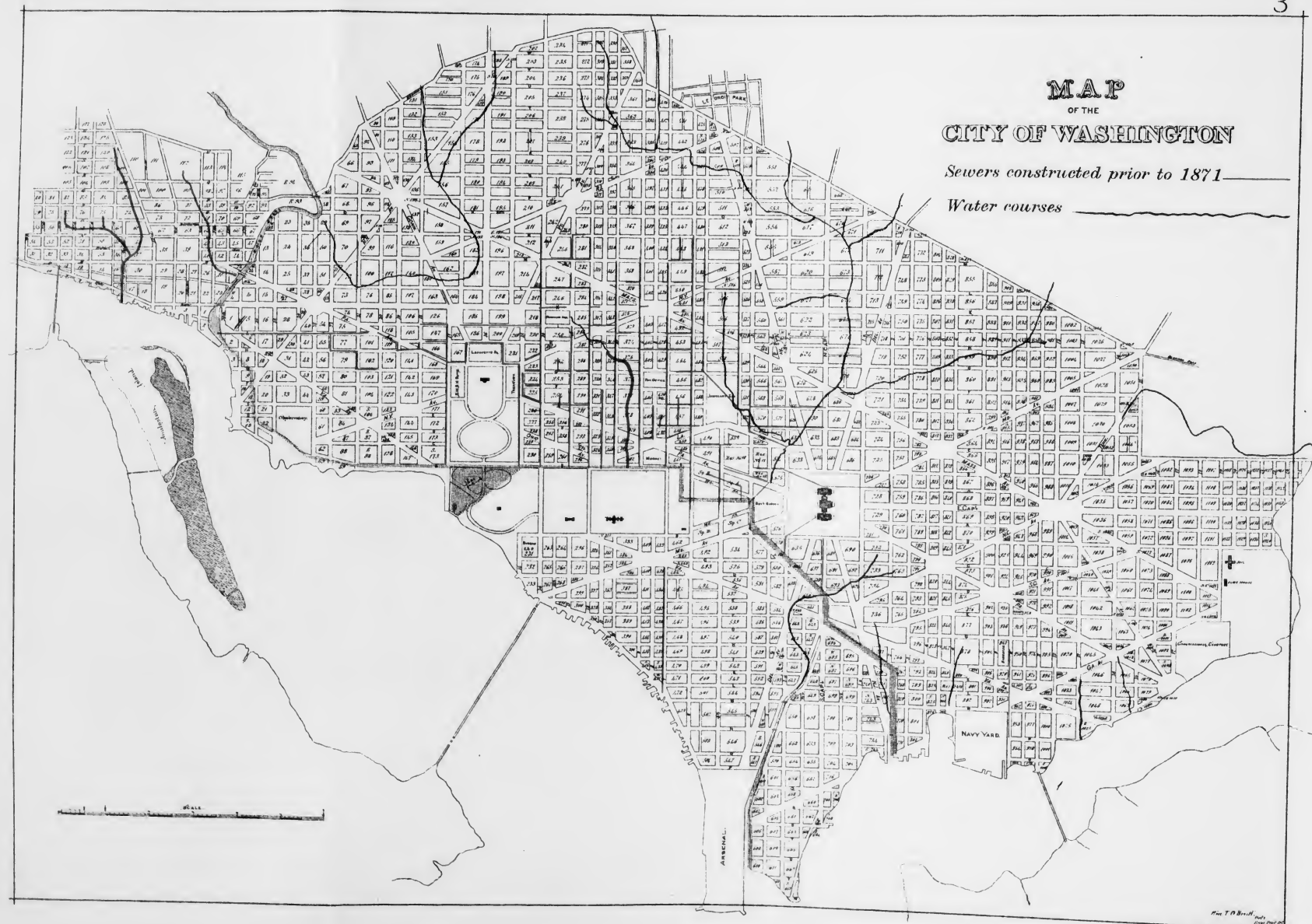


TABLE 12.—Average cost per linear foot of sewers constructed by day-labor fiscal year 1897.

Size.	Length in feet.	Cost of materials.	Cost of labor.	Total cost.
8-inch.....	1,120	\$0.264—	\$0.776+	\$1.04
	1,120	.263+	.775+	1.038
10-inch.....	12,265	.32+	.847—	1.167
	12,147	.318+	.854—	1.152
12-inch.....	24,821	.356+	.908+	1.264
	24,261	.353+	.889—	1.242
15-inch.....	6,753	.445—	1.115—	1.56
	6,114	.446+	1.033+	1.479
18-inch.....	5,700	.53+	1.243+	1.773
	5,427	.522+	1.199—	1.721
21-inch.....	4,336	.698—	1.563—	2.261
	3,575	.666+	1.497+	2.163
24-inch.....	1,266	.788—	1.83+	2.618
	1,266	.785—	1.827—	2.612
8-inch connection.....	27	.263+	.775+	1.038
10-inch connection.....	540	.318+	.847—	1.152
12-inch connection.....	1,020	.353+	.889—	1.242
15-inch connection.....	96	.446+	1.033+	1.479
18-inch connection.....	390	.522+	1.199—	1.721
21-inch connection.....	51	.666+	1.497+	2.163
24-inch connection.....	108	.785—	1.827—	2.612
Total.....		19 984—	25.565—	45.549

Basins constructed, 85.

NOTE.—Figures in black show average cost per linear foot with jobs of exceptional difficulty omitted.

SEWERS OF WASHINGTON.

The first action materially affecting the drainage of the city was the construction of the Washington Canal from the Potomac River at the foot of Seventeenth street W. to the Anacostia River at the foot of Second street E., authorized by act of Congress of May 1, 1802. This canal was purchased by the city under authority of an act approved January 3, 1831, and was used for commercial purposes until it was filled, between the years 1871 and 1880. The sewers constructed by the city prior to 1871 emptied into the canal, and as it occupied, through the greater part of its course, a natural valley line, it became the trunk drain for the central section of the city. After the introduction of the Potomac water supply, in the year 1859, the demand for and the construction of sewers increased, and it was not long before complaints were made of the nuisance caused by the foul materials brought by these sewers to the canal. In the year 1871 the filling of the canal was determined upon, and it was accomplished between the years 1871 and 1880. When the canal was filled its place as a drain and filth carrier was taken by the B street and Tiber sewers, emptying, respectively, into the Potomac and the Anacostia rivers. The sewers first constructed were designed to carry storm water, subsoil water, and liquid sewage, the discharge of solids into the sewers being prohibited by statute, and it was not until the act of the legislative assembly of August 21, 1871, that the discharge of solids into sewers was permitted, although in point of fact water-closets with direct sewer connections were in use for many years prior to the passage of this act. By an act of the legislative assembly of June 26, 1873, the cities of Georgetown and Washington were divided into sewerage and drainage sections, and under the direction of the board of public works the construction of the sewerage and drainage systems therein outlined and provided for was undertaken, and a considerable portion of the same was completed when the board of public works was abolished in 1874.

Under the form of government by commissioners the systems of sewers commenced by the board of public works was extended, and many of the main sewers were relieved by intercepting systems, the most important being the northeast boundary, the northwest boundary, the Q street and the New York avenue systems.

In the history of the sewers of Washington the first period may be considered as ending June 1, 1871, when the charters of Washington, Georgetown, and the levy court of Washington County were abolished by Congress.

The first appropriation for sewer construction was made by the city government October 20, 1810, when \$120 was appropriated for "erecting an arch on the south side of Pennsylvania avenue between Ninth and Tenth streets." Under this and

subsequent appropriations (eighteen in number) for culverts and arches was constructed the main drain extending from Tiber Creek, between Ninth and Tenth streets, to G street, thence to the intersection of Grant place and Tenth street, thence to the intersection of H and Eleventh streets. This sewer is still in service from B street sewer to C street, and from D street to Grant place. It is proposed to replace it between these limits by pipe sewers located within the lines of public streets and alleys.

Tiber sewer.—August 13, 1817, an act was passed by the city legislature “to build brick arch bridge over the Tiber at Pennsylvania avenue.” This act was repealed October 9, 1817. June 30, 1834, an appropriation of \$1,200 was made by Congress to repair the north end of the Tiber arch across Pennsylvania avenue. November 26, 1840, an act of the city legislature authorized the repair of the bridge at Pennsylvania avenue and Second street W. August 26, 1842, an appropriation of \$12,000 was made by Congress to “rebuild bridge over the Tiber crossing Pennsylvania avenue.” August 12, 1848, the construction of a culvert across Indiana avenue was authorized by act of Congress. November 27, 1855, an act passed by the city legislature urged Congress to continue the arching of Tiber Creek from Pennsylvania avenue to C street N. October 18, 1856, appropriation of \$6,000 was made by Congress to “complete culvert across Tiber Creek on Indiana avenue.” Appropriations aggregating \$53,150 were made by Congress to “change Tiber Creek through the Botanic Garden into a sewer,” as follows: July 2, 1864, July 28, 1866, March 2, 1867, July 20, 1868. Under contract No. 122, made by the Board of Public Works, the section of Tiber sewer between the south side of Maryland avenue and the Botanic Garden, and the section between the north side of Pennsylvania avenue and E street N. were constructed. Under contract No. 1012, made by the Board of Public Works, the section of Tiber sewer between the south side of Maryland avenue and the south side of G street S. was constructed, thereby completing the sewer. A rainstorm on August 5, 1878, so overcharged the sewer that a section in the Botanic Garden 400 feet in length was ruptured. The injury was repaired by the Commissioners of the District of Columbia under contracts Nos. 106 and 176. In the year 1893 a set of swinging tide gates was placed at the outlet for the purpose of impounding the tidal prism of water and releasing the same at low-water stage. These gates are operated by manual power and their use has somewhat improved the conditions in the sewer and in James Creek Canal.

Judiciary Square sewer.—July 26, 1832, an act of the city legislature authorized the construction of an arch at Third and D streets NW. July 2, 1837, August 21, 1839, May 9, 1844, August 5, 1844, acts of the city legislature authorizing the repair and extension of the arch at Third and D streets NW. November 8, 1847, an act of the city legislature authorized the construction of brick arch over water course on Second street W., between C and D streets N. April 5, 1849, act of the city legislature authorized the extension of culvert across Fourth street W., between E and G streets N. April 12, 1850, act of the city legislature authorized the extension of culvert at D and Third streets NW. to the south line of D street. October 3, 1851, act of the city legislature authorized the extension of culvert to west line of square No. 532. March 19, 1852, act of city legislature authorized the rebuilding of culvert on east front of square No. 532. August 16, 1853, act of the city legislature authorized the construction of culvert across square No. 532. May 16, 1857, act of the city legislature authorized the completion of culvert across square No. 532. August 12, 1848, act of Congress authorized the construction of culvert in Louisiana avenue. August 18, 1856, act of Congress authorized the construction of culvert in Louisiana avenue. March 15, 1856, act of Congress authorized the construction of sewer across Judiciary Square.

The trunk sewers in Georgetown were constructed under various acts of the legislature of Georgetown for arching over the natural water courses which they followed. These have been reconstructed by the Commissioners.

I transmit a list of sewers constructed by the corporations of Washington and Georgetown with sewer map; also a list of sewers constructed since the consolidation of these corporations in 1871.

INDEX OF SEWERS OF DISTRICT OF COLUMBIA.

[Abbreviations: C. W., acts of corporation of Washington; B. P. W., contracts with Board of Public Works; B. P. W. & C., contracts with Board of Public Works extended by Commissioners; Commrs., contract with Commissioners of the District of Columbia; d. l., day-labor. Where the letter X appears after a contract number it indicates that the work was done under an extension of the contract.]

One-half street E.

M to N street S., both sides, d. l. 1. 1894.
N street S., crossing, d. l. 1. 1889.

One-half street W.

F to G street S., No. 589 (Commrs.).
G street S. (basin), No. 957 (Commrs.).
M to N street S., d. l. 1. 1895.

First street E.

Pennsylvania ave. to D st. S., No. 88 (B. P. W.).
F street to Virginia avenue S., No. 414 (B. P. W.).
B to C street N., No. 498 (B. P. W.).
D street N. (2 basins), No. 712 (B. P. W.).
D to F street S., No. 795 (B. P. W.).
L to N street N., No. 836 (B. P. W.).
B street N. to B street S., No. 944 (B. P. W.).
C to F street N., No. 1047 (B. P. W.).
F to Chicago street N., No. 51 (Commrs.).
C to D street S., No. 103 (Commrs.).
B to C street S., No. 500 (Commrs.).
E street S. (basin), No. 728 (Commrs.).
H to I street N., No. 730 (Commrs.).
I to L street N., No. 954 (Commrs.).
C to D street N., No. 954 (Commrs.).
D street N. (basin), No. 1183 (Commrs.).
B street to Maryland avenue S., No. 1195 (Commrs.).
D street to North Carolina avenue S., No. 1287 (Commrs.).
O street N. (basins), No. 1473 (Commrs.).
E to G street S., No. 1896 (Commrs.).
East Capitol to A street N., east side, d. l. 1. 1877.
A to B street N., d. l. 1. 1879.
Maryland avenue to B street N., d. l. 1. 1880.
L street N. (basin), d. l. 1. 1885.
East Capitol to Carroll street S., d. l. 1. 1887.
East Capitol to A street N., d. l. 1. 1887.
A to B street S., d. l. 1. 1887.
I street E. (basin), d. l. 1. 1890.
K street E. (basin), d. l. 1. 1890.
Carroll street S., d. l. 1. 1890.
B to C street N., d. l. 1. 1890, Repl.
D st. to North Carolina ave. S., d. l. 1. 1892, Repl.
Quincy crossing N., d. l. 1. 1892, Repl.
E street to Virginia avenue S., d. l. 1. 1892, Repl.
N to O street S., d. l. 1. 1894.
B to C street N. (siphon), d. l. 1. 1894.
L to M street S., d. l. 1. 1894.
North Carolina avenue (basins), NE. corner, d. l. 1. 1895.
I to K street N., d. l. 1. 1896.
E street S. (basin), SE. corner, d. l. 1. 1896.
North Carolina avenue (basin), NW. corner, d. l. 1. 1896.
I to K street S., d. l. 1. 1897.
M to N street S., d. l. 1. 1897.
Hockman street (basin), SE. corner, d. l. 1. 1897.
East Capitol to B street S. (basin), d. l. 1. 1897.

First street W.

G to I street N., No. 100 (B. P. W.).
Massachusetts ave. to K st. N., No. 384 (B. P. W.).
F to G street N., No. 671 (B. P. W.).
Maryland avenue to B st. S., No. 730 (B. P. W.).
O street to Boundary N., No. 754 (B. P. W. & C.).
G to H street N., No. 821 (B. P. W.).
O street to Boundary N., No. 831 (B. P. W.).
E to G street S., No. 589 (Commrs.).
F to G street S., No. 593 (Commrs.).
M to Pierce street N., No. 631 (Commrs.).
B street S. (basin), No. 728 (Commrs.).
E street S. (basin), No. 728 (Commrs.).
D to E street S., No. 730 (Commrs.).
E to Canal street S., No. 954 (Commrs.).

Florida avenue to S st. N., No. 957 (Commrs.).
Pierce street (basin), No. 1171 (Commrs.).
S to U street N., No. 1171 (Commrs.).
L to Pierce street N., No. 1195 (Commrs.).
Florida avenue N. (basins), No. 1256 (Commrs.).
R street N. (basin), No. 1256 (Commrs.).
N street to New York avenue N., No. 1468 (Commrs.).
N street S. (basin), No. 1473 (Commrs.).
I street S. (basin), No. 1473 (Commrs.).
K street S. (basins), No. 1473 (Commrs.).
T street N. (basin), No. 1473 (Commrs.).
S street N. (basin), No. 1473 (Commrs.).
N to O street N., No. 1506 (Commrs.).
T street to Rhode Island avenue N., No. 1749 (Commrs.).
V to W street N., No. 1868 (Commrs.).
B to C street S., east side, d. l. 1. 1884.
I to K street N., east side, d. l. 1. 1884.
B to Canal street (basin), d. l. 1. 1885.
K to L street N., d. l. 1. 1885.
G street N. (basin), d. l. 1. 1888.
C street S., d. l. 1. 1889.
D street S., d. l. 1. 1889.
K to L street N., d. l. 1. 1889.
B to C street S. (basins), d. l. 1. 1890.
G to H street S., d. l. 1. 1890.
D street S. (basin), d. l. 1. 1891.
Florida avenue to R street N., d. l. 1. 1891.
B to C street N., d. l. 1. 1891.
I street N. (basin), d. l. 1. 1892.
D to E street N., d. l. 1. 1892, Repl.
R to Randolph street N., d. l. 1. 1892.
Maryland avenue S., d. l. 1. 1892.
M to N street S., d. l. 1. 1894.
K to L street S., d. l. 1. 1894.
L street S. (basin), d. l. 1. 1894.
M to M street S., d. l. 1. 1894.
M street N., d. l. 1. 1894.
W street N. (basins), d. l. 1. 1894.
B to Canal street S., d. l. 1. 1894, Repl.
I to K street N., d. l. 1. 1894.
Indiana avenue to B street N., d. l. 1. 1894.
N to O street S., d. l. 1. 1895.
O street S. (basin), d. l. 1. 1895.
Seaton street N. (basin), d. l. 1. 1895.
Rhode Island avenue (basin), d. l. 1. 1895.
U street N., d. l. 1. 1895.
K to L street N., d. l. 1. 1895.
K street S., crossing, d. l. 1. 1896.
V street N. (basin), NW. corner, d. l. 1. 1896.
U street N. (basin), NW. corner, d. l. 1. 1896.
V street N. (basin), NE. corner, d. l. 1. 1896.
I to K street S., d. l. 1. 1896.
O to P street S., d. l. 1. 1897.
V to W street N., d. l. 1. 1897.
O to P street N., d. l. 1. 1897.

Second street E.

D street S., extend west end of culvert under Second street at August 21, 1858 (C. W.).
East Capitol to A st. N., construct 24-foot barrel sewer from alley in square No. 760 to connect with sewer in A st., October 15, 1869 (C. W.).
A street to Maryland avenue N., east side, No. 811 (B. P. W.).
A street to Maryland avenue N., west side, verbal order, 1876 (Commrs.).
C st. to Maryland ave. N., No. 1028 (B. P. W.).
C to D street N., No. 243 (B. P. W.).
B to C street N., west side, No. 83 (B. P. W.).
Pennsylvania ave. to D st. S., No. 208 (B. P. W.).
East Capitol street to Pennsylvania avenue, No. 413 (B. P. W.).
East Capitol to A street S., No. 653 (B. P. W.).
F to I street N., No. 702 (B. P. W. & C.).
A to B street S., No. 638 (B. P. W.).
Massachusetts ave. to F st., No. 589 (Commrs.).

¹Original sewer constructed under contract with B. P. W.

G street N. (basin), No. 728 (Commsrs.).
 East Capitol street and Pennsylvania avenue,
 No. 954 (Commsrs.).
 B to D street S., No. 956 (Commsrs.).
 E to G street N., No. 1135 (Commsrs.).
 D street to North Carolina avenue S., No. 1135.
 I street S. (basin), No. 1473 (Commsrs.).
 G to H street N., No. 1723 (Commsrs.).
 I to 1st N. (flushing basin), No. 1913 (Commsrs.).
 Massachusetts avenue to E street N., d. l., 1877.
 M to N street S., d. l., 1882.
 C to D street N., d. l., 1889.
 C to D street S., d. l., 1891, Repl.
 Cst. to Pennsylvania ave. S., d. l., 1891, Repl.
 I street S. (basin), d. l., 1892.
 Pennsylvania ave. and Cst. S., d. l., 1892, Repl.
 G to I street S., d. l., 1892.
 G to H street N., d. l., 1893.
 L to M street S., d. l., 1893.
 I street to Virginia avenue S., d. l., 1894.
 K to L street N., d. l., 1894.
 M to N street S., d. l., 1895.
 Parker to K street N., d. l., 1895.
 L to M street S., d. l., 1897.
 M street S., intersection, d. l., 1897, Repl.

Second street W.

E to F street N., construct 18-inch tile sewer
 from a point 120 feet south of F street to the
 E street sewer, May 9, 1871 (C. W.).
 B to I street N., No. 100 (B. P. W.).
 Canal to B street S., No. 539 (Commsrs.).
 E to F street S., No. 539 (Commsrs.).
 F to G street S., No. 590 (Commsrs.).
 D st. to Virginia ave. S., No. 593 (Commsrs.).
 E street S. (basin), No. 826 (Commsrs.).
 Cst. to Indiana ave. N., No. 954 (Commsrs.).
 I street S. (basins), No. 1171 (Commsrs.).
 C to D street S., No. 1270 (Commsrs.).
 G to I street S., No. 1468 (Commsrs.).
 I to K street S., No. 1473 (Commsrs.).
 E street S. (basin), No. 1473 (Commsrs.).
 K street S. (basins), No. 1473 (Commsrs.).
 Florida ave. to S st. N., No. 1899 (Commsrs.).
 F street to Massachusetts avenue N., No. 2009
 (Commsrs.).
 B street to Maryland ave. S., east side, d. l., 1884.
 Canal to C street S., east side, d. l., 1884.
 H to I street N., d. l., 1886.
 Pennsylvania avenue to B street N., d. l., 1889.
 Virginia avenue S. (basin), d. l., 1887.
 G street S. (basin), d. l., 1889.
 C to D street S., d. l., 1890.
 P street S., d. l., 1892.
 Canal street S., d. l., 1892.
 H to I street S., d. l., 1893.
 T to Thomas street N., d. l., 1894.
 Maple to Rhode Island avenue N., d. l., 1893.
 M to N street S., d. l., 1894.
 S to Seaton street N., d. l., 1894.
 M to N street S., d. l., 1895.
 U to Elm street N., d. l., 1894.
 Massachusetts avenue N., crossing, d. l., 1895,
 Repl.
 Massachusetts ave. to H st. N., d. l., 1895, Repl.
 F to G street N., d. l., 1895, Repl.
 C to D street S., d. l., 1896.

Third street E.

East Capitol to D street S., No. 208 (B. P. W.).
 F to G street N., No. 502 (B. P. W. & C.).
 North Carolina avenue to I street S., No. 843
 (B. P. W.).
 A street S. to F street N., No. 901 (B. P. W.).
 M to N street S., No. 954 (Commsrs. N.).
 Massachusetts avenue N., crossing, No. 587
 (Commsrs.).
 Massachusetts to Maryland avenue N., No. 590
 (Commsrs.).
 B street to Maryland avenue N., No. 593
 (Commsrs.).
 L to M street S., No. 826 (Commsrs.).
 K to L street S., No. 954 (Commsrs.).
 F street N. (basin), No. 957 (Commsrs.).
 G street N. (basin), No. 957 (Commsrs.).
 I street S. (basins), No. 957 (Commsrs.).
 D street N. (basin), No. 1171 (Commsrs.).

Virginia avenue S. (basin), No. 1171 (Commsrs.).
 G to H street N., No. 1195 (Commsrs.).
 D to E street S., No. 1896 (Commsrs.).
 I street S., flushing basin, No. 1913 (Commsrs.).
 A to C street N., No. 2008 (Commsrs.).
 F to G street N., No. 2367 (Commsrs.).
 East Capitol to A street N., east side, d. l., 1881.
 N street to Eastern Branch S., d. l., 1885.
 East Capitol to A street N., d. l., 1889.
 North Carolina avenue to C street S., d. l., 1889.
 I to K street S., d. l., 1890.
 I street to Virginia avenue S., d. l., 1890.
 East Capitol to A street N., d. l., 1891, Repl.
 F to G street N., d. l., 1892.
 G to H street N., d. l., 1892.
 North Carolina avenue to C street S., d. l., 1893.
 I to K street N., d. l., 1894.
 H to I street N., d. l., 1894.
 G to H street N., d. l., 1894.
 M to N street S., d. l., 1894.
 K to L street S., d. l., 1894.
 M to N street S., d. l., 1895.
 A to C street N., d. l., 1895.
 R to S street N., d. l., 1896.
 South Carolina ave. to E st. S., d. l., 1896, Repl.
 L to M street N., d. l., 1896.
 Quincy street N., d. l., 1896.
 East Capitol street (flushing basin), d. l., 1896.
 E street S. (basins), NE. and NW. corners, d. l.,
 1896.
 K street S., crossing, d. l., 1897.
 G street N., crossing, d. l., 1897.
 Q to R street N., d. l., 1897.
 I to K street S., d. l., 1897.
 N street to Georgia avenue S., d. l., 1897.
 I to K street N., d. l., 1897.
 F street N., d. l., 1897.

Third street W.

D to E street N., July 8, 1865 (C. W.).
 E to F street N., September 1, 1865 (C. W.).
 F street N., crossing, July 13, 1866 (C. W.).
 E to I street N., No. 1a (B. P. W.).
 K st. to New York ave. N., No. 2301 (B. P. W.).
 Indiana avenue to I street N., No. 2304 (B. P. W.).
 C to D street S., No. 376 (B. P. W.).
 E to M street S., No. 394 (B. P. W.).
 P to Q street N., No. 407 (B. P. W.).
 C street to Maryland ave. S., No. 790 (B. P. W.).
 N to P street N., No. 589 (Commsrs.).
 B street to Virginia ave. S., No. 589 (Commsrs.).
 Q to R street N., No. 631 (Commsrs.).
 G to H street S., No. 730 (Commsrs.).
 M to N street S., No. 730 (Commsrs.).
 D street S., (basin), No. 826 (Commsrs.).
 G street S., (basins), No. 823 (Commsrs.).
 I to K street S., No. 954 (Commsrs.).
 I street S. (basins), No. 957 (Commsrs.).
 H to I street S., No. 1195 (Commsrs.).
 N to Van street S., 1195 (Commsrs.).
 E to F street S., No. 1468 (Commsrs.).
 F to G street S., No. 1473 (Commsrs.).
 N to O street N., No. 1723 (Commsrs.).
 Florida avenue to Elm street N. (Harewood
 avenue), No. 1728 (Commsrs.).
 K to L street N., No. 1899 (Commsrs.).
 M to N street N. (flushing basin), No. 1913
 (Commsrs.).
 E to I street N., No. 2361 (Commsrs.).
 P to Q street N., west side, d. l., 1877.
 B to C street S., east side, d. l., 1877.
 B to C street N., d. l., 1886.
 O to McLean street S., d. l., 1885.
 D to E street N., d. l., 1888.
 N to O street N., d. l., 1888.
 N to O street N., d. l., 1889.
 T st. to Florida ave. N. (Harewood av.), d. l., 1890.
 T street N., crossing (Harewood av.), d. l., 1892.
 T street, circle at (Harewood av.), d. l., 1894.
 Elm to Wilson street N., d. l., 1893.
 C to D street S., d. l., 1894, Repl.
 P to Q street N., d. l., 1894.
 C street S., crossing, d. l., 1895, Repl.
 L to M street S., d. l., 1896.
 O to McLean st. S., northwest corner, d. l., 1896,
 Repl.
 P to Q street N., d. l., 1897, Repl.
 C street S. (basin), NW. corner, d. l., 1897.

Fourth street E.

Pennsylvania avenue S., culvert across, August 15, 1812 (C. W.).
 E street and Pennsylvania avenue, September 18, 1851 (C. W.).
 E and Pennsylvania avenue, repair arch, November 30, 1848 (C. W.).
 E street and Pennsylvania avenue, extend sewer, March 22, 1852 (C. W.).
 C street, extend to south line of, October 24, 1863 (C. W.).
 B to C street, extend sewer from old culvert to southwest corner of square No. 819, October 31, 1863 (C. W.).
 North Carolina to Pennsylvania avenue, February 27, 1871 (C. W.).
 New York to Indiana avenue, No. 288 (B. P. W.).
 East Capitol street to Pennsylvania avenue, No. 382 (B. P. W.).
 B to F street N., No. 550 (B. P. W.).
 Massachusetts avenue to E street N., No. 819 (B. P. W.).
 North Carolina avenue to I street S., No. 833 (B. P. W.).
 C to G street N., No. 254 (Commsrs.).
 East Capitol to H street N., No. 589 (Commsrs.).
 B to C street N., No. 590 (Commsrs.).
 A to B street N., No. 593 (Commsrs.).
 H to I street N., No. 631 (Commsrs.).
 E street N. (basin), No. 724 (Commsrs.).
 G street N. (basin), No. 728 (Commsrs.).
 I street N. (basin), No. 826 (Commsrs.).
 Virginia avenue S. (basin), No. 826 (Commsrs.).
 East Capitol to B street S., No. 954 (Commsrs.).
 I to L street N., No. 954 (Commsrs.).
 K to L street S., No. 1169 (Commsrs.).
 L street to Georgia ave. S., No. 1171 (Commsrs.).
 D street N. (basins), No. 1171 (Commsrs.).
 I to L street S., No. 1195 (Commsrs.).
 B street to Pennsylvania avenue S., No. 1257 (Commsrs.).
 East Capitol street to Pennsylvania avenue, No. 1270 (Commsrs.).
 E street to Massachusetts avenue N., No. 1716 (Commsrs.).
 B to C street N., No. 1797 (Commsrs.).
 I street S., flushing basin, No. 1913 (Commsrs.).
 Brentwood road to Q st. N., No. 2181 (Commsrs.).
 South Carolina avenue to G street S., d. l., 1886.
 K street N., d. l., 1886.
 F to G street N., d. l., 1867.
 H to I street N. (basin), d. l., 1888.
 I to K street N., d. l., 1888.
 D to E street S., d. l., 1890, Repl.
 F to E street S., d. l., 1891, Repl.
 F to G street N., d. l., 1892.
 East Capitol to A street N. (basin), d. l., 1893.
 I to M street N., d. l., 1894.
 K street S. (basin), d. l., 1894.
 Massachusetts ave. to B st. N., d. l., 1894, Repl.
 E st. to North Carolina ave. S., d. l., 1894, Repl.
 H to I street N., d. l., 1894.
 A to B street S., d. l., 1895, Repl.
 L to M street N., d. l., 1896.
 I street N. (basin), d. l., 1895.
 A to B street S., d. l., 1896, Repl.
 A street N. (basin), N.W. corner, d. l., 1896.
 F street N. (basin), SE. corner, d. l., 1897.

Fourth street W.

E to I street N. (not constructed), November 10, 1865 (C. W.).
 E to F street N., April 27, 1867 (C. W.).
 New York ave. to F st., October 23, 1868 (C. W.).
 M street N., extend to north side, August 6, 1870 (C. W.).
 M to P street N., No. 582 (B. P. W. & C.).
 R st. to Florida ave. N., west side, d. l., 1880.
 N to O street N., d. l., 1885.
 P to Q street N., d. l., 1890.
 N to O street N., d. l., 1891.
 F street to Florida avenue N., d. l., 1896, Repl.
 Florida avenue to T street, No. 826 (Commsrs.).
 T to Wilson street, No. 1170 (Commsrs.).
 Elm street (basins), No. 1473 (Commsrs.).
 Wilson street (basins), No. 1473 (Commsrs.).
 Pomeroy street (basins), No. 1473 (Commsrs.).

Elm to Wilson street, No. 1728 (Commsrs.).
 Wilson to Pomeroy street, No. 2084 (Commsrs.).
 Florida avenue to T street, d. l., 1888.

Four-and-a-half street W.

Canal to C street N., March 23, 1854 (C. W.).
 P street S. to Canal, No. 63 (B. P. W.).
 E to School street S., No. 884 (B. P. W.).
 C to D street S., No. 286 (Commsrs.).
 C to D street N., No. 954 (Commsrs.).
 Wilson to Pomeroy st. N., No. 1473 (Commsrs.).
 Maryland ave. to D st. S., No. 1750 (Commsrs.).
 Maryland to Maine avenue and in Reservation D, No. 1900 (Commsrs.).
 M to N st. S. (flushing basin), No. 1913 (Commsrs.).
 L street S. (basin), d. l., 1889.
 Pennsylvania avenue N. (basin), d. l., 1890.
 Maryland avenue S., d. l., 1890.
 H to I street S., d. l., 1890, Repl.
 G to H street S., d. l., 1891, Repl.
 M to N street S., d. l., 1891, Repl.
 G to H street S., d. l., 1893, Repl.
 I to K street S., d. l., 1894, Repl.
 C street to Maryland ave. S., d. l., 1894, Repl.
 F to G street S., d. l., 1895, Repl.
 L street S. (automatic siphon), d. l., 1895.
 M to N street S., d. l., 1896, Repl.
 H to I street S., d. l., 1896, Repl.
 N to O street S., d. l., 1897, Repl.
 N street S., d. l., 1897, Repl.
 C to D street S., d. l., 1897, Repl.

Fifth street E.

East Capitol to C street S., No. 463 (B. P. W.).
 F to G street N., No. 570 (B. P. W.).
 B street to Pennsylvania avenue S., No. 588X (B. P. W.).
 C to E street N., No. 589 (Commsrs.).
 East Capitol to A street N., No. 589 (Commsrs.).
 K to L street N., No. 589 (Commsrs.).
 I to K street N., No. 590 (Commsrs.).
 C street N. (basin), No. 728 (Commsrs.).
 H to I street N., No. 730 (Commsrs.).
 E to G street S., No. 730 (Commsrs.).
 C to D street S., No. 730 (Commsrs.).
 K street N. (basin), No. 826 (Commsrs.).
 L street N. (basin), No. 826 (Commsrs.).
 Virginia avenue S. (basin), No. 826 (Commsrs.).
 Virginia ave. to G street S., No. 954 (Commsrs.).
 T to U street N., No. 1389 (Commsrs.).
 R to T street N., No. 1190 (Commsrs.).
 B to C street S., No. 1723 (Commsrs.).
 East Capitol to B street S., No. 1797 (Commsrs.).
 L street N., flushing basin, No. 1913 (Commsrs.).
 S to T street N., No. 2181 (Commsrs.).
 T street and Rhode Island avenue N., No. 2217 (Commsrs.).
 East Capitol to A street N., east side, d. l., 1883.
 A to B street N., d. l., 1886.
 L to M street N. (basins), d. l., 1887.
 H to I street N., d. l., 1890.
 G to H street N., d. l., 1890.
 H to I street N., d. l., 1891.
 A to B street N., d. l., 1894.
 D to E street S., d. l., 1894.
 East Capitol to B street S., d. l., 1894, Repl.
 D to E street S., d. l., 1894.
 E to F street N., d. l., 1895.
 G to H street N., d. l., 1896.
 I to K street N., d. l., 1896.
 F to G street N., d. l., 1896.
 G to H street N., d. l., 1896.
 C street S., flushing basin, d. l., 1896.
 G street and Virginia avenue S., d. l., 1897.
 I to K street S., d. l., 1897.
 L to M street S., d. l., 1897.
 G to H street N., d. l., 1897.
 K to L street S., d. l., 1897.
 E to F street N., d. l., 1897.
 G street N. (basin), N.W. and SW. corners, d. l., 1897.
 L street S. (basin), SW. corner, d. l., 1897.

Sixth street E.

H street crossing, May 23, 1871 (C. W.).
 East Capitol to C street S., No. 463 (B. P. W.).

C street and Maryland avenue N., No. 557 (B. P. W.).
 G to K street N., No. 702 (B. P. W. and C.).
 East Capitol street to North Carolina avenue, No. 838 (B. P. W. and C.).
 Pennsylvania avenue to E street S., No. 850 (B. P. W.).
 Virginia avenue to M street S., No. 876 (B. P. W.).
 Eastern Branch to M street S., No. 876 (B. P. W. and C.).
 East Capitol to A street N., No. 889 (Comms.).
 North Carolina avenue S., No. 933 (Comms.).
 C street N. (basin), No. 728 (Comms.).
 G to H street N., No. 730 (Comms.).
 B street N. (basin), No. 957 (Comms.).
 D street N. (basins), No. 1171 (Comms.).
 F to G street N., No. 1715 (Comms.).
 B street S., crossing, No. 1728 (Comms.).
 Georgia avenue to Eastern Branch S., No. 2059 (Comms.).
 H street N. (basins), Dec. 17, 1877 (Comms.).
 I street N. (basins), Dec. 17, 1877 (Comms.).
 North Carolina and Pennsylvania avenue, north side, d. l. 1882.
 A to B street N., east side, d. l. 1876.
 B street to Massachusetts avenue N., d. l. 1889.
 B street S., d. l. 1890.
 M street S., d. l. 1890.
 E to F street N., d. l. 1891.
 B st. to North Carolina av. S. d. l. 1892, Repl.
 C to D street N., d. l. 1892.
 E street N., d. l. 1893.
 F to G street N., d. l. 1893.
 L to M street N., d. l. 1893.
 A to B street N., d. l. 1893.
 L street S., d. l. 1894.
 A to B street N., d. l. 1894.
 I to K street N., d. l. 1894.
 L to M street N., d. l. 1894.
 East Capitol to B street S., d. l. 1894, Repl.
 D to E street N., d. l. 1895.
 Pennsylvania ave. S., flushing basin, d. l. 1895.
 East Capitol street, flushing basin, d. l. 1895.
 Maryland avenue N., flushing basin, d. l. 1895.
 F to G street N., d. l. 1896.
 D st. to South Carolina ave. S., d. l. 1896, Repl.
 G st. to South Carolina ave. S., d. l. 1896, Repl.
 L to M street S., d. l. 1897.
 E to F st. N., d. l. 1897.
 L st. S. (basins), NW. and NE. cors., d. l. 1897.
 L street S., crossing, d. l. 1897, Repl.

Fifth street W.

G to M street, May 27, 1867 (C. W.).
 L to M street N., August 6, 1870 (C. W.).
 D to E street N., No. 61 (B. P. W.).
 E to G street N., No. 61 (B. P. W.).
 D to G street N., No. 61 (B. P. W.).
 O to P street N., No. 558 (B. P. W. and C.).
 L to O street N., both sides, No. 644 (B. P. W.).
 P to Q street N., No. 760 (B. P. W. and C.).
 K to L street N., both sides, No. 913 (B. P. W.).
 Q st. to Florida ave. N., No. 819 (B. P. W. and C.).
 S st. to Rhode Island ave. N., No. 826 (Comms.).
 S street to Florida ave. N., No. 826 (Comms.).
 Ridge to O street N., No. 954 (Comms.).
 Newark to Omaha st. N., No. 224 (Comms.).
 P to Q street N., west side, d. l. 1878.
 P to Q street N., d. l. 1889.
 E to F street N., d. l. 1889.
 Q to R street N., d. l. 1891, Repl.
 Florida avenue to Maple street, d. l. 1891.
 S street N. (basin), d. l. 1894.
 M to N street N., d. l. 1894, Repl.
 R street to Rhode Island ave. N., d. l. 1894, Repl.
 S street to Rhode Island ave. N., d. l. 1895, Repl.
 N to O street N., d. l. 1896.
 Philadelphia to Omaha street N., d. l. 1897.

Sixth street W.

G street to Massachusetts avenue N., August 16, 1854 (C. W.).
 G street to I street N., September 9, 1857 (C. W.).
 I to L street N., January 13, 1865 (C. W.).
 Pennsylvania avenue, across at Sixth street W., August 15, 1812 (C. W.).

Pennsylvania avenue to Tiber, July 31, 1813 (C. W.).
 Canal to south side of Louisiana avenue, March 23, 1854 (C. W.).
 Louisiana avenue to G street N., November 19, 1860, January 17, 1863, May 29, 1863 (C. W.).
 I to L st., deficiency, January 13, 1865 (C. W.).
 L to M street, February 6, 1869 (C. W.).
 G st. to Massachusetts ave. See Indiana ave.
 Maine avenue to Potomac River S., No. 369 (B. P. W.).
 M to P street N., No. 466 (B. P. W.).
 L to Boundary street N., both sides, No. 641 (B. P. W.).
 Maryland avenue to C st. S., No. 557 (B. P. W.).
 P to Q street N., No. 760 (B. P. W. & C.).
 Rhode Island to Florida ave., No. 825 (B. P. W.).
 D to School street S., No. 884 (B. P. W.).
 Rhode Island avenue to S street, No. 1058 (B. P. W. & C.).
 C street S. (basin), No. 728 (Comms.).
 Rhode Island avenue N., No. 730 (Comms.).
 R to S street N., No. 731 (Comms.).
 C st. to Louisiana ave. N., No. 1270 (Comms.).
 Trumbull to Howard street N., No. 1195 (Comms.).
 R to S street N., No. 2008 (Comms.).
 G to H street N., replacing, No. 2082 (Comms.).
 S street to Florida avenue, east side, d. l. 1876.
 Missouri to Maryland avenue S., d. l. 1878.
 F to G street N., d. l. 1883.
 Pennsylvania avenue (basin), d. l. 1885.
 Q to R street N., d. l. 1887.
 B street to Massachusetts avenue N., d. l. 1889.
 E to F street S., d. l. 1890, Repl.
 E to F street S., d. l. 1891, Repl.
 Q to P street N., d. l. 1891, Repl.
 N to O street N., d. l. 1891.
 K to L street N., d. l. 1892.
 Missouri to Pennsylvania ave. (basin), d. l. 1894.
 Trumbull street to Lincoln avenue, d. l. 1894.
 Pomeroy, near (basin), d. l. 1894.
 Q street N., d. l. 1894, Repl.
 Howard avenue to College street, d. l. 1894.
 N street N., automatic siphon, d. l. 1895.
 L street S. (basin), d. l. 1896.
 B street N. to Maryland avenue S., d. l. 1896.
 Missouri avenue, south of (basins), d. l. 1896.
 F to G street S., d. l. 1897, Repl.

Seventh street E.

Pennsylvania avenue to Eastern Market, No. 2974 (B. P. W.).
 Virginia avenue to I street S., No. 484 (B. P. W.).
 K to L street N., No. 702 (B. P. W. & C.).
 East Capitol street to North Carolina avenue, No. 811 (B. P. W.).
 East Capitol to G street N., No. 811 (B. P. W.).
 D to I street S., No. 125 (B. P. W.).
 G to I street S., No. 1045 (B. P. W.).
 G to I street S., No. 1050 (B. P. W.).
 D to I street S., No. 1052 (B. P. W.).
 G to I street N., No. 1067 (B. P. W.).
 G street to South Carolina avenue (basins), No. 79 (Comms.).
 East Capitol street to Maryland avenue N., No. 588 (Comms.).
 E st. to Maryland ave. N., No. 591 (Comms.).
 East Capitol st., crossing, No. 591 (Comms.).
 G street S. (basins), No. 728 (Comms.).
 D street to South Carolina avenue S., No. 731 (Comms.).
 C street to North Carolina avenue S., No. 826 (Comms.).
 H street N. (basin), No. 957 (Comms.).
 B to D street N. (basins), No. 976 (Comms.).
 G to I street S., No. 1262 (Comms.).
 L street S. (basin), No. 1256 (Comms.).
 L to M street N., No. 1566 (Comms.).
 L st. to Florida ave. N., No. 1716 (Comms.).
 E to G street S., No. 1790 (Comms.).
 D to E street S., No. 1797 (Comms.).
 F st. N., automatic siphon, No. 1913 (Comms.).
 B street to Massachusetts avenue N., d. l. 1883.
 A st. N. to North Carolina ave. S., d. l. 1885.
 G street S., crossing, d. l. 1889.
 G to I street S. (basin), d. l. 1889.
 H to I street N., d. l. 1889.
 Virginia avenue to L street S., d. l. 1889.

H street N. (basin), d. l., 1890.
H to I street, d. l., 1890.
G to H street N., d. l., 1892.
L to M street N., d. l., 1893.
G to H street N., d. l., 1895.
A street S. (basin), d. l., 1894.
North Carolina ave. and C st. S., d. l., 1894.
D street N. (basin), d. l., 1894.
E to G street S., d. l., 1894, Repl.
East Capitol to A street S., d. l., 1894, Repl.
B street S., automatic siphon, d. l., 1894.
North Carolina ave. S., automatic siphon, 1894.
Virginia avenue to I street S., d. l., 1895.
H to I street N., d. l., 1895.
Virginia avenue to I street S., d. l., 1895, Repl.
I to K street N., d. l., 1895.
H to I street N., d. l., 1895.
K to L street S., d. l., 1896.
L street to Virginia avenue S., d. l., 1897.
Milwaukee street to Bunker Hill road N., d. l., 1897.
K to L street S., d. l., 1897.
L street S., d. l., 1897.
South Carolina avenue, automatic siphon, d. l., 1897.

Seventh street W.

Pennsylvania avenue, extend arch across, July 15, 1814 (C. W.).
H street, north of, December 28, 1854 (C. W.).
F street to Pennsylvania avenue, September 22, 1880 (C. W.).
H street to Massachusetts avenue, September 6, 1892 (C. W.). Change of location to either side of railway tracks and increase of size authorized September 30, 1893.
L street N., to May 30, 1894 (C. W.).
Hst. to Canal, July 27 and August 10, 1895 (C. W.).
N street, to, (not approved by mayor), June 12, 1897 (C. W.).
Virginia avenue to river, south, May 9, 1870 (C. W.). Amended to construct sewers in both sides in lieu of center, March 28, 1871.
Water street, crossing, No. 362 (B. P. W.).
I street to New York avenue, No. 692 (B. P. W.).
N to O street N., west side, No. 806 (B. P. W.).
N to O street N., No. 835 (B. P. W. and C.).
Pennsylvania avenue and B street N., west side, No. 861 (B. P. W.).
T street to Florida avenue, No. 1034 (B. P. W.).
New York ave. to L st. N., No. 826 (Comms.).
R to T street N., No. 954 (Comms.).
N to O street N., east side, d. l., 1883.
N to O street N., east side, d. l., 1877.
L to M street N., east side, d. l., 1877.
B street N. to B street S., d. l., 1889, Repl.
B street S. (basins), d. l., 1890.
B street N. and B street S., d. l., 1890, Repl.
P to Q street N., d. l., 1890.
Pennsylvania avenue (basin), d. l., 1894.
N to O street N., d. l., 1895.
Mount Vernon Place N., d. l., 1895.
T street to Florida avenue N., d. l., 1896, Repl.
Dst. S. (basins), NW. and SW. corners, d. l., 1896.

Eighth street E.

C street to navy-yard S., No. 297½ (B. P. W.).
East Capitol street to Massachusetts avenue, No. 811 (B. P. W. and C.).
Maryland to Massachusetts avenue N., No. 107 (Comms.).
East Capitol to A street N., No. 589 (Comms.).
C street S. (basin), No. 728 (Comms.).
I to K street N., No. 730 (Comms.).
G to H street N., No. 730 (Comms.).
A street to South Carolina avenue S., No. 826 (Comms.).
C to D street S., No. 835 (Comms.).
H street N. (basin), No. 1171 (Comms.).
F street S. to Maryland avenue N., No. 1202 (Comms.).
G to H street N., No. 1468 (Comms.).
Maryland to Massachusetts avenue N., Repl., No. 1797 (Comms.).
E to I street S., No. 1896 (Comms.).
K st. N., automatic siphon, No. 1913 (Comms.).
Keokuk to Lowell st. N., No. 2217 (Comms.).

B to C street S., No. 2394 (Comms.).
C to D street N., west side, d. l., 1882.
A to Massachusetts avenue N., west side, d. l., 1882.
East Capitol to A street N., east side, d. l., 1876.
East Capitol to A street S., east side, d. l., 1876.
E street S. (basin), d. l., 1885.
I to K street N., d. l., 1888.
Massachusetts avenue N. (basin), d. l., 1889.
East Capitol to A street S., d. l., 1890.
C to D street N., d. l., 1891.
C street to Massachusetts avenue N., d. l., 1891.
B to C street N., d. l., 1892.
L to M street S., d. l., 1895, Repl.
H street N., d. l., 1895, Repl.
East Capitol to A street N., d. l., 1896, Repl.
Lowell to Milwaukee street, d. l., 1897.
E street to Maryland avenue N., d. l., 1897.
D to G street N., d. l., 1897.
F street N. (basin), southeast corner, d. l., 1897.

Eighth street, W.

Market space to E st. N., Nov. 1, 1866 (C. W.).
L street and Mount Vernon place N., No. 192 (B. P. W.).
G to L street N., No. 207 (B. P. W.).
D to F street N., No. 346 (B. P. W.).
G to O street N., No. 346 (B. P. W.).
Water street S., crossing, No. 362 (B. P. W.).
R street to boundary, N., No. 489 (B. P. W.).
D to G street S., No. 501 (B. P. W.).
Rhode Island avenue to Boundary N., No. 770 (B. P. W.).
T street to Florida avenue N., No. 835 (B. P. W.).
B to C street S., No. 854 (B. P. W.).
Grant avenue N., No. 1056 (B. P. W.).
N street N., crossing, No. 476 (Comms.).
D to E street S., No. 631 (Comms.).
C street N. (basin), No. 728 (Comms.).
S to T street N., No. 730 (Comms.).
G to H street S., No. 730 (Comms.).
E to G street S., No. 954 (Comms.).
Q street to Rhode Island avenue N., No. 954 (Comms.).
Grant avenue to Irving street N., No. 1183 (Comms.).
K street S. (basin), No. 1256 (Comms.).
C to D street S., No. 1772 (Comms.).
T street to Florida avenue, east side, d. l., 1879.
B street S., to Reservation No. —, east side, d. l., 1882.
Grant avenue to Irving street, d. l., 1889.
F street N., d. l., 1890.
H street N. (basin), d. l., 1891.
Rhode Island avenue, d. l., 1891.
D to E street N., d. l., 1891.
New Hampshire avenue to Omaha street, special permit, 1893.
Quincy to Savannah street N., special permit, 1894.
G to H street N., d. l., 1894, Repl.
Rock Creek Church Road and Newark street, d. l., 1894.
Rock Creek Church Road northward, d. l., 1894.
F street S. (basin), northwest corner, d. l., 1895.
B to C street S., d. l., 1897, Repl.
F to G street S., d. l., 1897.

Ninth street, E.

Marine Barracks to Eastern Branch, act of Congress, March 3, 1863.
I to K street N., No. 727 (B. P. W.).
East Capitol to B st. N., No. 811 (B. P. W. and C.).
G to I street N., No. 1434 (B. P. W. and C.).
E to I street S., No. 588 (Comms.).
D to E street S., No. 591 (Comms.).
C to E street S., No. 591 (Comms.).
C street to North Carolina avenue S., No. 631 (Comms.).
East Capitol to A street S., No. 954 (Comms.).
E to F street N., No. 954 (Comms.).
B street S. (basin), No. 1171 (Comms.).
C street N. (basin), No. 1236 (Comms.).
F street N. (basin), No. 1236 (Comms.).
N to O street S., No. 1287 (Comms.).

¹ Original sewer constructed under contract with B. P. W.).

C to D street N., No. 1468 (Commsrs.).
 Maryland ave. to D st. N., No. 1506 (Commsrs.).
 H to I street N., No. 1723 (Commsrs.).
 North Carolina avenue, automatic siphon, No. 1913 (Commsrs.).
 F st. N., automatic siphon, No. 1913 (Commsrs.).
 Rhode Island avenue to Providence street N., No. 2317 (Commsrs.).
 M st. to Virginia ave. S., No. 2323 (Commsrs.).
 H street N. (basins), December 17, 1877.
 B to C street S., west side, d. l. 1879.
 East Capitol to A street S., east side, d. l. 1878.
 B to C street N., d. l. 1888.
 B to C street S., d. l. 1889.
 I to K street N., d. l. 1890.
 E to F street N., d. l. 1890.
 E to F street N., d. l. 1891.
 F street to North Carolina avenue S., d. l. 1891.
 F to G street N., d. l. 1892.
 H street N., d. l. 1893.
 B to C street N., d. l. 1894.
 East Capitol to A street S., d. l. 1895, Repl.
 K to L street N., d. l. 1896.
 East Capitol street to Massachusetts avenue, d. l. 1896, Repl.
 Providence street to Bunker Hill road, d. l. 1897.
 F to G street N., d. l. 1897.
 I to K street S., d. l. 1897.
 H street N., crossing, d. l. 1897.

Ninth street W.

G street N. to Canal (Congress requested to construct sewer in, February 19, 1852) (constructed with branch in F street, between Eighth and Ninth streets, in connection with construction of United States Patent Office, in 1852).
 New York avenue, extend to north side of, October 15, 1852 (C. W.).
 Massachusetts avenue, to north side of, April 18, 1853 (C. W.).
 Massachusetts ave. to L st., May 23, 1863 (C. W.).
 M street N., extend to, August 11, 1864 (C. W.).
 N street N., extend to, (without mayor's approval), June 12, 1867.
 L to M street, August 6, 1870 (C. W.).
 M to Boundary street N., both sides, No. 150 (B. P. W.).
 Pennsylvania avenue to M street N., No. 150 (B. P. W.).
 Water street S., crossing, No. 362 (B. P. W.).
 Rhode Island ave. to R st., No. 770 (B. P. W.).
 E to Water street S., No. 808 (B. P. W. and C.).
 Rhode Island avenue and Q street N., No. 835 (B. P. W.).
 Bst. and Virginia ave. S., No. 854 (B. P. W. & C.).
 Florida avenue N., crossing, No. 206 (Commsrs.).
 M to O street N., No. 476 (Commsrs.).
 D to E street S., No. 589 (Commsrs.).
 R to S street N., No. 589 (Commsrs.).
 E to I street N., No. 591 (Commsrs.).
 U to V street N., No. 591 (Commsrs.).
 Est. to Maryland ave. S., No. 593 (Commsrs.).
 P to Q street N., No. 826 (Commsrs.).
 T to U street N., No. 826 (Commsrs.).
 I street S. (basin), No. 1857 (Commsrs.).
 Westminster to T street N., No. 1270 (Commsrs.).
 Florida and Grant aves. N., No. 1506 (Commsrs.).
 Florida and Grant aves. N., No. 1723 (Commsrs.).
 H to I street N., No. 1723 (Commsrs.).
 Florida avenue N., automatic siphon, No. 1913 (Commsrs.).
 S to T street N., east side, d. l. 1885.
 R to S street N., d. l. 1885.
 T to U street N., west side, d. l. 1876.
 S street N., d. l. 1886.
 O to P street N., d. l. 1888.
 N to O street N., d. l. 1888.
 U street N., near (basin), d. l. 1893.
 E street S., d. l. 1893.
 Florida to Grant avenue (basin), d. l. 1894.
 Q st. to Rhode Island ave. N., d. l. 1895, Repl.
 T street to Florida avenue N., d. l. 1895, Repl.
 Mount Vernon place, automatic siphon, d. l. 1896.
 Pennsylvania avenue (basin), northwest corner, d. l. 1896.
 D street N. (basin), northwest corner, d. l. 1896.
 Pennsylvania avenue N., d. l. 1897.

Tenth street E.

Pennsylvania to South Carolina avenue, No. 791 (B. P. W.).
 East Capitol street to Pennsylvania avenue, No. 791 (B. P. W.).
 East Capitol street to Massachusetts avenue, No. 811 (B. P. W. & C.).
 H to I street N., No. 1034 (B. P. W. & C.).
 G to I street N., No. 5 (Commsrs.).
 B to C street N., No. 589 (Commsrs.).
 E to G street S., No. 631 (Commsrs.).
 Est. to Pennsylvania ave. S., No. 954 (Commsrs.).
 East Capitol to A street S., No. 954 (Commsrs.).
 B street S. (basin), No. 1256 (Commsrs.).
 D street S. (basins), No. 1256 (Commsrs.).
 South Carolina avenue S. (basin), No. 1256 (Commsrs.).
 G to I street S., No. 1270 (Commsrs.).
 Maryland ave. to E st. N., No. 1715 (Commsrs.).
 D to E street N., No. 1723 (Commsrs.).
 B street to South Carolina avenue S., No. 1897 (Commsrs.).
 G st. S., automatic siphon, No. 1913 (Commsrs.).
 East Capitol street to Massachusetts avenue, No. 2156 (Commsrs.).
 H to K street N., No. 2184 (Commsrs.).
 I street N. (basins), December 17, 1877.
 Massachusetts ave. to B st., east side, d. l. 1882.
 North Carolina avenue to East Capitol street, d. l. 1885.
 E to G street S., d. l. 1886.
 B street to Massachusetts avenue, d. l. 1886.
 East Capitol street to Massachusetts avenue, d. l. 1887.
 Pennsylvania avenue to D street S., d. l. 1889.
 L to M street S., d. l. 1890.
 E to G street S., d. l. 1890.
 F street to Maryland avenue N., d. l. 1890.
 B to G street S., d. l. 1893.
 D street S., to Maryland avenue N., d. l. 1893.
 E to G street S., d. l. 1894.
 C to D street N., d. l. 1895.
 East Capitol to A street, d. l. 1895.
 D to E street N., d. l. 1895.
 D street N. (basin), SE corner, d. l. 1895.
 D street S. (basins), d. l. 1895.
 K street to Virginia avenue S., d. l. 1897.
 D street S., automatic siphon, d. l. 1895.
 M street to Public Space S., d. l. 1897.
 Public Space and K street S., d. l. 1896.
 I to K street S., d. l. 1897.
 M to N street S., d. l. 1896.
 M to N street S., d. l. 1897.
 Massachusetts avenue to East Capitol street, d. l. 1897.

Tenth street W.

I to New York avenue, November 4, 1857, January 7, 1863, October 20, 1863 (C. W.).
 New York avenue to M street, May 30, 1864, July 27, 1865 (C. W.).
 Canal to New York avenue, May 23, 1867 (C. W.).
 New York to Massachusetts avenue, January 4, 1871 (C. W.).
 Massachusetts avenue to N street N., No. 354 (B. P. W.).
 Water street S., crossing, No. 362 (B. P. W.).
 R street to Rhode Island avenue, both sides, No. 738 (B. P. W.).
 R to T street N., No. 803 (B. P. W.).
 Maryland avenue to C street S., No. 854 (B. P. W. & C.).
 G to Water street S., No. 1003 (B. P. W.).
 R to T street N., No. 1008 (B. P. W.).
 N to O street N., No. 5 (Commsrs.).
 U to V street N., No. 206 (Commsrs.).
 Q to R street N., No. 584 (Commsrs.).
 Rhode Island avenue to Q street N., No. 591 (Commsrs.).
 E street S. (basin), No. 826 (Commsrs.).
 D to E street S., No. 1270 (Commsrs.).
 Westminster st. (basin), No. 1473 (Commsrs.).
 Rhode Island avenue to P street N., No. 1566 (Commsrs.).
 L to M street N., No. 1897 (Commsrs.).
 Virginia ave. to B street S., east side, d. l. 1883.
 R to Q street N., east side, d. l. 1884.
 Florida avenue, crossing, d. l. 1884.

E to F street, d. l., 1889.
 G to H street N., west side, d. l., 1883.
 E to F street, d. l., 1882.
 D to E street S., west side, d. l., 1882.
 R to S street N., d. l., 1885.
 French to S street N., 1884.
 Maryland avenue to C street S., d. l., 1886.
 P street to Rhode Island avenue N., d. l., 1887.
 E to F street S., d. l., 1887.
 D to E street S., d. l., 1887.
 V to W street N., d. l., 1887.
 U to V street N., d. l., 1888.
 Virginia avenue to C street S., d. l., 1888.
 Rhode Island avenue to P street N., d. l., 1889.
 R to S street N., d. l., 1889.
 V to W street N., d. l., 1889.
 New York ave. to K st. N. (basin), d. l., 1890.
 F to G street N., d. l., 1892.
 V to W street N., d. l., 1890.
 N to O street N., d. l., 1893. Repl.
 Pennsylvania avenue, N. crossing, d. l., 1895.
 D to E street S., d. l., 1893.
 Massachusetts ave. to L st. N., d. l., 1894. Repl.
 V to W street N., d. l., 1895.
 F to G street S., d. l., 1896.
 Massachusetts avenue N., automatic siphon, d. l., 1896.
 C street and Maryland avenue S., d. l., 1897.
 T street N., crossing, d. l., 1897. Repl.
 E to F street S., d. l., 1897.
 C to D street S., d. l., 1897.
 R to T street N., automatic siphon, d. l., 1897.

Eleventh street E.

B street to South Carolina avenue S., No. 582 (B. P. W. and C.).
 D to E street S., No. 731 (B. P. W.).
 Bst. to South Carolina ave. S., No. 781 (B. P. W.).
 North to South Carolina avenue, west side, No. 1623 (B. W. P.).
 North to South Carolina avenue, east side, No. 1633 Ex. (B. P. W.).
 Park place to C street N., No. 589 (Commsrs.).
 M st. to Eastern Branch, No. 589 (Commsrs.).
 E to I street S., No. 631 (Commsrs.).
 I street S. (basins), No. 957 (Commsrs.).
 O street S. (basin), No. 957 (Commsrs.).
 O to P street S. (basin), No. 957 (Commsrs.).
 H to I street N., No. 1270 (Commsrs.).
 L to M street S., No. 1270 (Commsrs.).
 I to K street N., No. 1468 (Commsrs.).
 B street S. (basin), No. 1473 (Commsrs.).
 North Carolina avenue S., automatic siphon, No. 1913 (Commsrs.).
 East Capitol street, automatic siphon, No. 1913 (Commsrs.).
 G to I street S., replacing, No. 2206 (Commsrs.).
 B to C street N., east side, d. l., 1878.
 Massachusetts avenue to C street N., d. l., 1878.
 East Capitol to A street N., d. l., 1887.
 N street S. (basin), d. l., 1889.
 South Carolina avenue to B st. S., d. l., 1890. Repl.
 B street S. (basin), d. l., 1891.
 South Carolina avenue to C st. S., d. l., 1891. Repl.
 B to C street S., d. l., 1891. Repl.
 East Capitol to B street S., d. l., 1891.
 A to B street N., d. l., 1891.
 Public Square to B street N., d. l., 1891.
 D street S. (basin), d. l., 1893.
 F to G street N., d. l., 1892.
 H to I street N., d. l., 1893.
 A to B street N., d. l., 1894.
 K to L street S., d. l., 1894.
 I to K street S., d. l., 1894.
 C to H street N. (basin), d. l., 1894.
 C to D street S., d. l., 1894.
 Georgia avenue S. (basin), d. l., 1894.
 B street S., d. l., 1894.
 North Carolina avenue to B st. S., d. l., 1894. Repl.
 G to H street N., d. l., 1894.
 I to K street S., d. l., 1895.
 I street to Florida avenue N., d. l., 1895.
 H to K street N., d. l., 1895.
 G to H street N., d. l., 1895.
 D to E street N., d. l., 1895.
 I street N. (basin), d. l., 1895.
 G street N. (basin), d. l., 1895.
 I to K street N. (basins), d. l., 1896.
 F street N. (basin), NE. corner, d. l., 1896.

Maryland ave N. (basin), SW. corner, d. l., 1896.
 F street N. (basin), SE. corner, d. l., 1896.
 Florida ave. N. (basin), SW. corner, d. l., 1896.
 K street to Florida avenue N. (basin), d. l., 1896.
 E street N. (basin), d. l., 1896.
 D to E street S., d. l., 1896. Repl.
 M street S. to Virginia avenue, d. l., 1897.
 Anacostia bridge, near (basin), d. l., 1897.
 O street S. (basin), NW. corner, d. l., 1897.
 N street S. (basin), NW. corner, d. l., 1897.

Eleventh street W.

F street N., July 26, 1815, July 11, 1820 (C. W.).
 F street to Pennsylvania avenue N., March 23, 1821 (C. W.).
 C street to Pennsylvania avenue N., November 2, 1821, August 18, 1825 (C. W.).
 C street to Canal, May 30, 1851 (C. W.).
 Canal to N street N., December 2, 1865 (C. W.).
 Canal to F street N., April 21, 1869 (C. W.).
 F to O street N., No. 92 (B. P. W.).
 Water street S., crossing, No. 362 (B. P. W.).
 S to U street N., No. 402 (B. P. W. and C.).
 Maryland avenue to Potomac River, No. 530 (B. P. W.).
 B street to Maryland avenue, No. 855 (B. P. W.).
 U to V street N., No. 1050 (B. P. W. & C.).
 T street N. (basin), No. 723 (Commsrs.).
 S street N. (basin), No. 1171 (Commsrs.).
 N to P street N., No. 1581 (Commsrs.).
 E street S. to Potomac River, replacing, No. 1598 (Commsrs.).
 New York ave. to M st. N., No. 2050 (Commsrs.).
 N to O street N., d. l., 1877.
 T to S street N., east side, d. l., 1879.
 R st. to Vermont ave. N., west side, d. l., 1880.
 Q to T street N., west side, d. l., 1880.
 K to L street N., west side, d. l., 1882.
 D to E street S., d. l., 1882.
 E to F street N., west side, d. l., 1884.
 O to Q street N., d. l., 1887.
 Virginia avenue to C street S., d. l., 1887.
 Virginia to Maryland avenue S., d. l., 1890. Repl.
 Virginia avenue to C street S., d. l., 1891. Repl.
 Rhode Island avenue to Q street N., d. l., 1892.
 G to H street N., d. l., 1893.
 C street to Maryland avenue S., d. l., 1894. Repl.
 C street to Maryland avenue S., d. l., 1894.
 F to Water street S., d. l., 1895. Repl.
 E street N. (basins), d. l., 1895.
 Maryland ave. S., automatic siphon, d. l., 1895.
 U to V street N., d. l., 1896.
 Est. N. (basins), SW. and SE. corners, d. l., 1896.
 N to O street N., automatic siphon, d. l., 1896.

Twelfth street E.

K street, across, October 27, 1870 (C. W.).
 K to I street S., February 11, 1871 (C. W.).
 I st. to Pennsylvania ave. S., No. 391 (B. P. W.).
 South Carolina to Pennsylvania avenue, No. 820 (Commsrs.).
 Maryland ave. to G st. N., No. 954 (Commsrs.).
 Florida avenue N. (basins), No. 957 (Commsrs.).
 E street S. (basins), No. 957 (Commsrs.).
 B street to South Carolina avenue S., No. 972 (Commsrs.).
 G to James street N., No. 1004 (Commsrs.).
 H to I street N., No. 1004 (Commsrs.).
 F street N. (basin), No. 1256 (Commsrs.).
 G to H street N., No. 1468 (Commsrs.).
 D to Duncan street N., No. 1468 (Commsrs.).
 A street N. (basin), No. 1473 (Commsrs.).
 B street N. (basin), No. 1473 (Commsrs.).
 D street N., No. 1473 (Commsrs.).
 B to C street S., No. 1715 (Commsrs.).
 B to C street S., crossing Twelfth, No. 1715 (Commsrs.).
 A to B street N., No. 1716 (Commsrs.).
 E st. to Maryland ave. N., No. 1728 (Commsrs.).
 D to E street N., No. 1797 (Commsrs.).
 N st. to Eastern Branch S., No. 2459 (Commsrs.).
 D st. to Maryland ave. N., east side, d. l., 1881.
 H to I street N., d. l., 1887.
 G to H street S., d. l., 1887.
 M to N street S., d. l., 1887.
 M to N street S., d. l., 1888.
 C street to South Carolina avenue S., d. l., 1888.

G street to Maryland avenue N., d. l. 1889.
 R street S. (basin), d. l. 1891.
 N street to Florida avenue N. (basin), d. l. 1891.
 Florida avenue to N street N., d. l. 1891.
 Georgia avenue to L street S., d. l. 1891.
 Maryland avenue to G street N., d. l. 1891.
 B to C street N., d. l. 1892.
 D to E street N., d. l. 1893.
 B to C street S., d. l. 1893.
 A to B street S., d. l. 1893.
 A to B street N., d. l. 1894.
 N to P street N., d. l. 1894.
 C to D street S., d. l. 1895.
 B to D street N., d. l. 1895.
 D street S. (basin), NE. corner, d. l. 1895.
 C street S. (basin), NE. corner, d. l. 1895.
 Walker street (basin), NE. corner, d. l. 1895.
 B street S. (basin), NE. corner, d. l. 1895.
 C street S. (basin), d. l. 1895.
 C to D street S., d. l. 1896.
 D street N. (basin), SW. corner, d. l. 1896.
 Park street N. (basin), NW. corner, d. l. 1896.
 G to I street S., d. l. 1897.
 I to K street N., d. l. 1897.
 H to I street N., d. l. 1897.
 G to H street N., d. l. 1897.
 E street to Pennsylvania avenue S., d. l. 1887.
 Hartford to Lansing street N., d. l. 1897.
 O street S., intersection, d. l. 1897.

Twelfth street W.

Pennsylvania to Massachusetts avenue, November 16, 1898 (C. W.).
 M to N st., May 24, 1869, Nov. 12, 1870 (C. W.).
 M to N street N., March 28, 1871 (C. W.).
 Potomac River to canal, No. 28 (B. P. W.).
 Pennsylvania ave. to canal, No. 73 (B. P. W.).
 Massachusetts avenue to M street N., No. 343 (B. P. W.).
 Massachusetts avenue to M street N., No. 363 (B. P. W.).
 Q street N., crossing, No. 1058 (B. P. W.).
 Rhode Island avenue to Q street N., No. 1074 (B. P. W.).
 R to S street N., No. 1170 (B. P. W.).
 S to T street N., No. 244 (Comms.).
 N to O street N., No. 5 (Comms.).
 T to U street N., No. 533 (Comms.).
 Q to R street N., No. 826 (Comms.).
 O to P street N., No. 1103 (Comms.).
 V street N. (basin), No. 1256 (Comms.).
 S street N. (basin), No. 1256 (Comms.).
 E street S. (basin), No. 1473 (Comms.).
 R to S street N., No. 1798 (Comms.).
 N st. N., automatic siphon, No. 1913 (Comms.).
 Massachusetts avenue to M street N., No. 2085 (Comms.).
 V to W street N., July 27, 1877.
 P st. to Rhode Island ave. N., August 30, 1877.
 V to W street N., west side, d. l. 1877.
 S to T street N., east side, d. l. 1878.
 S to T street N., west side, d. l. 1879.
 R to S street N., d. l. 1883.
 B street N. to B street S., d. l. 1883.
 W street to Florida avenue N., d. l. 1885.
 U to V street N., d. l. 1887.
 O street N., d. l. 1888.
 Q to R street N., d. l. 1888.
 O to P street N., d. l. 1888.
 R to S street N., d. l. 1888.
 Rhode Island avenue to Q street N., d. l. 1888.
 O street N., d. l. 1890.
 P to G street N., d. l. 1890.
 P street to Rhode Island avenue N., d. l. 1891.
 S to T street N., d. l. 1892, Repl.
 N to O street N., d. l. 1893, Repl.
 U to V street N., d. l. 1893.
 D to E street N., d. l. 1893.
 S street N., crossing, d. l. 1894.
 C street to Virginia avenue S., d. l. 1895, Repl.
 S to T street N., d. l. 1894.
 S to T street N., d. l. 1895.
 R to S street N., d. l. 1897.

Thirteenth street E.

G to H street N., No. 702 (B. P. W. & C.).
 H to I street N., No. 449 (Comms.).
 F street N. (basin), No. 957 (Comms.).

North Carolina avenue to B street S., No. 1270 (Comms.).
 E to F street N., No. 1468 (Comms.).
 H to I street N., No. 1716 (Comms.).
 K street to Georgia ave. S., No. 2182 (Comms.).
 Maryland avenue to G street N., d. l. 1878.
 H to I street N., d. l. 1885.
 Maryland avenue to E street N., d. l. 1888.
 I street to Florida avenue N., d. l. 1890.
 D to E street N., d. l. 1892.
 Pennsylvania avenue to E street S., d. l. 1892.
 E to F street N., d. l. 1893.
 Duncan place (basin), d. l. 1893.
 E street S., d. l. 1894.
 Tennessee avenue (basin), d. l. 1894.
 H street N., crossing, d. l. 1894.
 D street N., d. l. 1895.
 C street to South Carolina avenue S., d. l. 1895.
 C street N. (basin), d. l. 1895.
 B to C street N., d. l. 1896.
 South Carolina to Kentucky avenue, d. l. 1896.
 South Carolina ave. (basin), SE. cor., d. l. 1896.
 Kentucky to Massachusetts avenue, d. l. 1896.
 A to B street N., d. l. 1896.
 A to B street S., d. l. 1896.
 Georgia avenue to G street S., d. l. 1896.
 D to C street S., d. l. 1897.
 South Carolina to Kentucky avenue, d. l. 1897.
 D to E street S., d. l. 1897.
 Pennsylvania ave. to E st. S., d. l. 1897.
 South Carolina avenue S. (basin), d. l. 1897.

Thirteenth street, W.

E street to Canal, May 6, 1854 (C. W.).
 E to G street N., August 11, 1857 (C. W.), September 16, 1857.
 G to I street N., October 14, 1869 (C. W.).
 E street to Canal, November 2, 1861 (C. W.).
 L street to Massachusetts avenue, August 22, 1870 (C. W.).
 M to N street, December 9, 1870 (C. W.).
 N to S street N., March 21, 1871 (C. W.) (not constructed).
 N to O street N., east side, No. 428 (B. P. W.).
 Corcoran to R street N., No. 578 (B. P. W.).
 B street to Maryland avenue, No. 808 (B. P. W.).
 B street to Maryland avenue, No. 815 (B. P. W.).
 Potomac River to Maryland avenue, No. 854 (B. P. W. & C.).
 Riggs place and S street N., No. 930 (B. P. W. & C.).
 T to U street N., No. 1034 (B. P. W. & C.).
 V street N. (crossing), No. 1050 (B. P. W.).
 B street to Maryland avenue, No. 1067 (B. P. W.).
 Q st. to Iowa circle N., No. 1074 (B. P. W. & C.).
 O st. to Iowa circle N., No. 1087 (B. P. W. & C.).
 T to V street N., No. 5 (Comms.).
 Q to R street N., replacing, No. 826 (Comms.).
 Harvard to Columbian st. N., No. 838 (Comms.).
 Corcoran street N. (basin), No. 957 (Comms.).
 S to T street N., No. 1195 (Comms.).
 Princeton st. N. (basin), No. 1256 (Comms.).
 T to U street N., No. 1270 (Comms.).
 H street N. (basin), No. 1473 (Comms.).
 Wallach place N. (basin), No. 1473 (Comms.).
 U street S. (basin), No. 1473 (Comms.).
 E street S. (basin), No. 1473 (Comms.).
 Clifton street N. (basin), No. 1473 (Comms.).
 Florida ave. to V street N., No. 1506 (Comms.).
 Spring road to Lydecker street N., No. 1797 (Comms.).
 Columbia road to Kenyon street N., No. 1924 (Comms.).
 Q street N. (basins), October 13, 1877.
 R to S street N., east side, d. l. 1878.
 Q to Corcoran street N., west side, d. l. 1879.
 S to T street N., east side, d. l. 1882.
 Q to R street N., east side, d. l. 1882.
 R to S street N., east side, d. l. 1882.
 K to L street N., d. l. 1884.
 Q to T street N., west side, d. l. 1884.
 S to T street N., west side, d. l. 1883.
 Q to R street N., east side, d. l. 1883.
 R to S street N., d. l. 1885.
 S to T street N., d. l. 1886.
 R to S street N., d. l. 1887.
 Florida avenue to Clifton street N., d. l. 1887.
 D street S. (basin), d. l. 1889.
 Massachusetts avenue to M street N., d. l. 1889.

Harvard to Princeton street, d. l., 1889.
T to U street N., d. l., 1890.
Maryland avenue to E street S., d. l., 1890.
W street to Florida avenue N., d. l., 1891.
E to F street N., d. l., 1891.
Florida avenue N., d. l., 1892.
Princeton to Harvard street N., d. l., 1893.
Vermont avenue to Q street N., d. l., 1882.
Clifton to Roanoke street N., d. l., 1893.
Iowa circle to Q street N., d. l., 1893.
Harvard street N. (basins), d. l., 1894.
Clifton to Roanoke street N., d. l., 1894.
Yale to Princeton street N., d. l., 1894.
Lydecker to Lamar street, d. l., 1894.
Spring road to Lydecker avenue, d. l., 1894.
V street N. (basin), SW. corner, d. l., 1895.
Clifton street N. (basin), NE. corner, d. l., 1895.
O street N. (automatic siphon), d. l., 1895.
Yale to Princeton street N., d. l., 1896.
Whitney to Lydecker avenue, d. l., 1896.
Whitney avenue to Kenyon street N., d. l., 1896.
P to G street N., d. l., 1896.
Howard to Columbia street N., d. l., 1897.
Clifton to Roanoke street N., d. l., 1897.
Harvard street N., d. l., 1897.
Columbia road (basin), NW. corner, d. l., 1897.
Clifton street N. (basin), NW. corner, d. l., 1897.
Yale street N. (basin), SW. corner, d. l., 1897.

Thirteen-and-a-half street W.

C to E street N., No. 697 (B. P. W.).
B to D street S., No. 808 (B. P. W.).
Maryland avenue to Potomac River S., No. 854 (B. P. W. & C.).
Water street S. (basin), No. 728 (Commsrs.).
C street S. (basin), No. 957 (Commsrs.).
D street S. (basin), No. 1256 (Commsrs.).
B to C street N., west side, d. l., 1878.
B to C street S., d. l., 1878.
B to C street S., d. l., 1888, Repl.
C to D street S., both sides, d. l., 1888, Repl.
Maryland avenue to D street S., d. l., 1889, Repl.
B street N. (basins), NE. and NW. corners, d. l., 1896.
B to C street S., d. l., 1897, Repl.
Pennsylvania avenue to Eastern Branch, No. 1383 (Commsrs.).
Pennsylvania avenue to K street S., No. 1467 (Commsrs.).
Pennsylvania avenue to G street S., No. 1480 (Commsrs.).
E to F street N., No. 1716 (Commsrs.).
E to G street S., No. 1728 (Commsrs.).
B to E street S., No. 1868 (Commsrs.).
A to B street S., No. 1924 (Commsrs.).
North Carolina avenue to B street N., No. 2225 (Commsrs.).
H street to Florida avenue N., d. l., 1888.
E to F street N., d. l., 1893.
G street N. (basin), d. l., 1894.
E street S. (basins), d. l., 1894.
C street S. (basin), d. l., 1894.
D to E street S., d. l., 1894.
B to D street S. (basins), d. l., 1894.
South Carolina avenue S. (basin), d. l., 1894.
F street N. (basins), d. l., 1894.
Emerson street N. (basin), d. l., 1894.
G street N. (basin), d. l., 1894.
F to G street N., d. l., 1894.
C street to South Carolina ave. S., d. l., 1894.
C street to South Carolina ave. S., d. l., 1895.
E to G street S., d. l., 1896.
C street S., SW. corner (basin), d. l., 1896.
C street S., NE. corner (basin), d. l., 1896.
East Capitol to A street S., d. l., 1896.
F to G street N., d. l., 1896.
East Capitol to A street S., d. l., 1897.
B street to South Carolina avenue S., d. l., 1897.
North Carolina avenue S., crossing, d. l., 1897.
F to G street N., d. l., 1897.
E to G street S., d. l., 1897.
B to C street S., d. l., 1897.

Fourteenth street W.

Pennsylvania avenue to Tiber, August 15, 1812 (C. W.).
Franklin square to Canal, Congress urged to construct sewer, June 21, 1853 (C. W.).

Pennsylvania avenue to E street, revives act to construct, August 26, 1860 (C. W.).
N street to Canal, June 8, 1865 (C. W.).
N street to Boundary N., both sides, No. 241 (B. P. W.).
B street to Maryland avenue S., No. 448 X (B. P. W.).
Pennsylvania avenue to H street, reconstruction, No. 94 (Commsrs.).
Rhode Island ave., crossing, No. 590 (Commsrs.).
Ohio avenue N. (basins), No. 728 (Commsrs.).
Maryland ave. to D st. S., No. 728 (Commsrs.).
Euclid place to Binney st. N., No. 730 (Commsrs.).
Euclid place to Welling street N., No. 730 (Commsrs.).
Welling street, crossing, No. 730 (Commsrs.).
Columbia to Park street N., No. 833 (Commsrs.).
Kenesaw ave. N. (basins), No. 1256 (Commsrs.).
Spring road N., No. 1297 (Commsrs.).
P street to Rhode Island avenue N., No. 1385 (Commsrs.).
Oak to Spring street N., No. 1387 (Commsrs.).
U street N. (basin), No. 1473 (Commsrs.).
Florida avenue N. (basin), No. 1473 (Commsrs.).
Roanoke to Princeton st. N., No. 1716 (Commsrs.).
P to Q street N., replacing, No. 1750 (Commsrs.).
D st. to Maryland ave. S., No. 1806 (Commsrs.).
T to V street N., replacing, No. 1896 (Commsrs.).
R st. N., automatic siphon, No. 1913 (Commsrs.).
Riggs street N., automatic siphon, No. 1913 (Commsrs.).
Florida avenue to Roanoke street N., No. 2060 (Commsrs.).
Center to Park street N., No. 2323 (Commsrs.).
T street N., crossing, d. l., 1878.
Florida avenue to Welling street N., d. l., 1885.
Florida avenue to Chapin street N., d. l., 1885.
Chapin to Welling street N., d. l., 1885.
Maryland avenue to D street S. (basin), d. l., 1888.
Florida avenue to Roanoke street N., d. l., 1889.
Park street N., d. l., 1889.
Park to Sheridan street N., d. l., 1889.
Pierce place N. (basin), d. l., 1891.
I to K street N., d. l., 1891.
K street N., d. l., 1891.
B to C street S., d. l., 1891.
D street N., d. l., 1891.
B to C street S., d. l., 1891.
Columbia road N. (basin), d. l., 1892.
C to D street S., d. l., 1892, Repl.
C to D street S., d. l., 1892.
Pennsylvania avenue to D street N., d. l., 1892.
C street to Ohio avenue N., d. l., 1894.
Spring road to Piney Branch, d. l., 1894.
Park street N. (basin), d. l., 1894.
D street S., crossing, d. l., 1894, Repl.
Princeton to Harvard street N., d. l., 1894.
Princeton to Harvard street N., d. l., 1895.
Bacon street to Columbia road N., d. l., 1895.
Bacon to Binney street N., d. l., 1895.
H to I street N., d. l., 1896.
Harvard to Columbia street, d. l., 1896.
B street N. SE. corner (basin), d. l., 1896.
Q st. N., NE. corner, automatic siphon, d. l., 1896.
Q street N., NW. corner, automatic siphon, d. l., 1896.
Q st. N., SW. corner, automatic siphon, d. l., 1896.
K to L street N., d. l., 1897.
Yale to Princeton street N., d. l., 1897.
Binney street N., near, d. l., 1897.
Princeton to Binney street N., d. l., 1897.

Fifteenth street E.

G street to Eastern Branch, through Isherwood, No. 809 (B. P. W.).
G st. to Tennessee ave. N., No. 820 (Commsrs.).
Tennessee ave. to Cst. N., No. 2003 (Commsrs.).
A to C street N., No. 2225 (Commsrs.).
H street S. (basin), d. l., 1889.
Gales to E street N., d. l., 1891.
G street N. (basin), d. l., 1894.
Pennsylvania to Georgia avenue S., d. l., 1894.
A to B street S., d. l., 1895.
B street to South Carolina avenue S., d. l., 1895.
Pennsylvania to Georgia avenue S., d. l., 1895.
C street N., SW. corner (basin), d. l., 1895.
E street N. (basin), d. l., 1895.
F street N., SW. corner (basin), d. l., 1895.

South Carolina avenue to B street S. (basin),
d. l. 1895.

B street S. (basins), d. l. 1895.

D street N. (basin), d. l. 1895.

East Capitol to A street N., d. l. 1896.

East Capitol to A street N. (basin), d. l. 1896.

G street N., crossing, d. l. 1897.

East Capitol to A street S., d. l. 1897.

Rosedale to Gales street N., d. l. 1897.

Rosedale street N. (basin), d. l. 1897.

Fifteenth street W.

Pennsylvania avenue to G street, November
15, 1897 (C. W.), construct sewer under act
of Congress of March 3, 1849.

White Lot, relay sewer along, act of Congress
of March 3, 1845.

S to T street N., No. 465 (B. P. W.).

R to S street N., No. 624 (B. P. W.).

S to T street N., No. 624 (B. P. W.).

K st. to Rhode Island ave. N., No. 629 (B. P. W.).

Rhode Island avenue to Boundary N., both
sides, No. 783 (B. P. W.).

R to S street N., No. 844 (B. P. W.).

N st. to Rhode Island ave. N., No. 1024 (B. P. W.).

Rhode Island avenue to Boundary No. 1094
(B. P. W.).

S to T st. N., replacing, No. 1094 (B. P. W. & C.).

E st. to New York ave. N., No. 177 (Commsr.).

S to T street N., No. 583 (Commsr.).

M street to Massachusetts avenue N., No. 589
(Commsr.).

T to U street N., No. 591 (Commsr.).

Corcoran to S street N., No. 601 (Commsr.).

O to P street N., No. 730 (Commsr.).

U to W street N., No. 730 (Commsr.).

B to D street S., No. 833 (Commsr.).

Pennsylvania avenue N. (basin), No. 957
(Commsr.).

U street N. (basins), No. 1473 (Commsr.).

Pennsylvania avenue to H street N., No. 1586
(Commsr.).

Chapin street N., automatic siphon, No. 1913
(Commsr.).

Kenesaw to Grant ave. N., No. 2231 (Commsr.).

R to S street N., d. l. 1878.

Q to Corcoran street N., west side, d. l. 1879.

R to S street N., d. l. 1879.

Massachusetts avenue to N street N., west side,
d. l. 1879.

R to S street N., west side, d. l. 1881.

Q to Corcoran street N., west side, d. l. 1880.

E street N., crossing, d. l. 1884.

O to P street N., west side, d. l. 1883.

R to Corcoran street N., west side, d. l. 1885.

New York ave. to H st. N., east side, d. l. 1884.

S to T street N., east side, d. l. 1877.

Massachusetts avenue to N street N., west side,
d. l. 1885.

Florida avenue, north of, d. l. 1885.

Pennsylvania avenue N., (basin), d. l. 1889.

Rhode Island avenue to O street N., d. l. 1890.

K to L street N., d. l. 1890, Repl.

P to Q street N., d. l. 1892, Repl.

Pennsylvania avenue N., d. l. 1892.

E street N., d. l. 1893.

Pierce place N., d. l. 1894, Repl.

Kenesaw avenue northward, d. l. 1895.

Kenesaw to Grant avenue N., d. l. 1895.

P to Q street N., d. l. 1896, Repl.

W street N. (basin), d. l. 1895.

V street N. (basin), d. l. 1895.

T street N. (basin), d. l. 1895.

R street N., NW. corner (basin), d. l. 1896.

H street N., d. l. 1896.

Kenesaw avenue to Columbia road N., d. l. 1897.

S to Pierce street N., d. l. 1897.

F street N., SE. corner (basin), d. l. 1897.

Massachusetts ave. to P st. N. (siphon), d. l. 1897.

Sixteenth street E.

Gales street to Benning's road, No. 897
(Commsr.).

Gales to Rosedale street N., No. 1716 (Commsr.).

Gales street N. (basin), d. l. 1894.

Gales to Benning's road N., d. l. 1894.

Sixteenth street W.

H to Boundary street N., No. 311 (B. P. W.).

V to Boundary st. N., No. 849 (B. P. W. & C.).

T to Caroline street N., No. 179 (Commsr.).

K to N street N., No. 591 (Commsr.).

U street N. (basin), No. 1256 (Commsr.).

U street N. (basin), No. 1473 (Commsr.).

Corcoran st. N. (basin), No. 1473 (Commsr.).

Caroline street, basin, No. 1473 (Commsr.).

Superior to Erie street N., No. 1728 (Commsr.).

New Hampshire avenue N., crossing, No. 2236
(Commsr.).

K to L street N., d. l. 1889, Repl.

K to L street N., d. l. 1890, Repl.

L to M street N., d. l. 1890, Repl.

K to L street N., both sides, d. l. 1891, Repl.

K street N., crossing, d. l. 1891, Repl.

P to Q street N., d. l. 1892, Repl.

Corcoran to R street N., d. l. 1894, Repl.

Rhode Island avenue, SW. corner, automatic
siphon, d. l. 1896.

U street, near intersection (basin), d. l. 1896.

Kenesaw to Grant avenue, d. l. 1897.

Seventeenth street E.

E street to Georgia avenue S., No. 2232
(Commsr.).

Seventeenth street W.

Pennsylvania avenue, May 9, 1811 (C. W.).

New York avenue, December 2, 1847 (C. W.);
October 16, 1850.

New York avenue to Pennsylvania avenue,
May 16, 1867 (C. W.).

Pennsylvania ave. to 1 st., May 16, 1867 (C. W.).

Pennsylvania avenue to Canal, act of Congress
May 15, 1850 (C. W.).

New York avenue to Potomac River, No. 245
(B. P. W.).

K street to Massachusetts avenue N., No. 247
(B. P. W.).

B st. to Virginia ave. N., No. 330 (B. P. W.).

N street to Boundary N., No. 355 (B. P. W.).

L to M street N., No. 549 (B. P. W.).

B street, temporary outlet, No. 590 (B. P. W.).

R to S street N., No. 929 (B. P. W. & C.).

R street to Massachusetts avenue N., No. 1094
(B. P. W. & C.).

Massachusetts avenue and O street, crossing,
No. 5 (Commsr.).

B street N., No. 177 (Commsr.).

B to G street N., No. 251 (Commsr.).

Rhode Island ave. to M st., No. 589 (Commsr.).

Q to Corcoran street N., No. 601 (Commsr.).

Corcoran street N. (basins), No. 957 (Commsr.).

O to Q street N. (basins), No. 1171 (Commsr.).

S street N. (basin), No. 1171 (Commsr.).

R street N. (basins), No. 1171 (Commsr.).

U street N. (basins), No. 1256 (Commsr.).

V street N. (basin), No. 1256 (Commsr.).

T street N. (basin), No. 1256 (Commsr.).

Park to Laurel street N., No. 1270 (Commsr.).

K to L street N., No. 1468 (Commsr.).

D to E street N., No. 1468 (Commsr.).

D street N. (basin), No. 1473 (Commsr.).

Park street N. (basin), No. 1473 (Commsr.).

M street N., 2 automatic siphons, No. 1913 (Commsr.).

L to DeSales street N., No. 2236 (Commsr.).

H to I street N., east side, d. l. 1883.

O to P street N., d. l. 1885.

Q to R street N., d. l. 1887.

Q to R street N., d. l. 1889.

Pennsylvania avenue N., crossing, d. l. 1891.

K to L street N., d. l. 1891, Repl.

Corcoran to R street N., d. l. 1892.

I to K street N., d. l. 1891, Repl.

Park street N. (basin), d. l. 1894.

R to S street N., d. l. 1896, Repl.

Willard to U street N., d. l. 1896.

Madison street N., SE. corner (basin), d. l. 1896.

Seaton to V street N., d. l. 1897.

Corcoran to R street N., d. l. 1897.

U st. N., NE. and NW. cors. (basins), d. l. 1897.

¹ Original sewer constructed under contract with B. P. W.

Eighteenth street W.

H street to Pennsylvania avenue N., May 16, 1867 (C. W.).
 Florida ave. to P st. N., No. 355 (B. P. W. & C.).
 M to N street N., No. 355 (B. P. W.).
 I to M street, No. 397 (B. P. W.).
 B street to Virginia avenue, No. 400 (B. P. W.).
 New York avenue, crossing, No. 538 (B. P. W.).
 N st. to Massachusetts ave., No. 677 (B. P. W.).
 P to Q street N., west side, No. 677 (B. P. W.).
 P street N. (basin), No. 1034 (B. P. W. & C.).
 Massachusetts ave. to Pst. N., No. 5 (Commsr.).
 E to F street N., No. 730 (Commsr.).
 P to Q street, No. 730 (Commsr.).
 C street to Virginia avenue, No. 1171 (Commsr.).
 C to G street N., No. 1225 (Commsr.).
 California avenue (basins), No. 1256 (Commsr.).
 Vernon street (basins), No. 1256 (Commsr.).
 Wyoming avenue (basin), No. 1256 (Commsr.).
 Wyoming avenue to Columbia road, No. 1270 (Commsr.).
 F st. to Pennsylvania ave., No. 1287 (Commsr.).
 D to E street N., No. 1468 (Commsr.).
 D street N. (basins), No. 1473 (Commsr.).
 E street N. (basin), No. 1473 (Commsr.).
 R street N. (basins), No. 1473 (Commsr.).
 Columbia road (basins), No. 1473 (Commsr.).
 M street to Jefferson place, d. l., 1879.
 P to Q street N., east side, d. l., 1882.
 Madison place (basin), d. l., 1888.
 Florida avenue N. (basin), d. l., 1890.
 Florida to Wyoming avenue, d. l., 1890.
 Florida avenue (basin), d. l., 1891.
 Oregon avenue to T street, d. l., 1891.
 G street N., d. l., 1892.
 P to Q street, d. l., 1892, Repl.
 Riggs to S street, d. l., 1892.
 Riggs to S street N., d. l., 1893.
 Riggs to S street N., d. l., 1894.
 P to Q street N., d. l., 1894, Repl.
 Oregon avenue to S street, d. l., 1894.
 California to Wyoming ave (basins), d. l., 1895.
 Columbia road (basins), d. l., 1895.
 Columbia road and Adams street, d. l., 1896.
 L to M street N., d. l., 1896, Repl.
 K to L street, d. l., 1896, Repl.
 Riggs place (basin), NW. corner, d. l., 1897.
 M street N., NW. corner (basin), d. l., 1897.

Nineteenth street W.

H st. to Pennsylvania ave., May 16, 1867 (C. W.).
 G to H street, November 7, 1867 (C. W.).
 K street to Dupont Circle, No. 294 (B. P. W.).
 F to G street N., No. 408 (B. P. W.).
 I to K street N., No. 493 (B. P. W.).
 Dupont Circle, from southward, No. 672 (B. P. W.).
 P to Q street, east side, No. 677 (B. P. W.).
 P street N. (basin), No. 849 (B. P. W.).
 Q street (basin), No. 849 (B. P. W.).
 Q street to Boundary, No. 849 (B. P. W.).
 L to M street N., No. 1797 (Commsr.).
 M street (automatic siphon) No. 1913 (Commsr.).
 M to N street N., west side, d. l., 1879.
 Columbia road, crossing, d. l., 1881.
 R to S street N., d. l., 1884.
 Pennsylvania avenue to I street, d. l., 1888.
 R street, crossing, d. l., 1887, Repl.
 R to S street, d. l., 1889.
 Florida to California avenue, d. l., 1890.
 S to Cedar street, d. l., 1890.
 R to T street, d. l., 1890.
 Q to R street, d. l., 1891, Repl.
 N to O street, d. l., 1892, Repl.
 Cedar street, d. l., 1893.
 S to T street, d. l., 1893.
 M to N street, d. l., 1895, Repl.
 E to F street, d. l., 1896, Repl.
 B street SE. corner (basin), d. l., 1896.
 Q street (automatic siphon), southeast corner, d. l., 1896.
 Howard avenue to Piney Branch, d. l., 1897.
 Ingleside terrace, d. l., 1897.
 M street, crossing, d. l., 1897.
 R to S street (automatic siphon), d. l., 1897.

Twentieth street W.

Pennsylvania avenue to canal, June 11, 1868 (C. W.), not constructed.
 I street to canal, July 12, 1869 (C. W.), not constructed.
 L to M street, No. 405 (B. P. W.).
 Pennsylvania ave. to Est., No. 408 (B. P. W.).
 L to N street, No. 487 (B. P. W.).
 E street to Virginia avenue, No. 744 (B. P. W.).
 Massachusetts to Connecticut avenue, No. 849 (B. P. W.).
 R to S street N., No. 849 (B. P. W.).
 New York avenue to F street, No. 939 (B. P. W.).
 S street to Florida avenue, No. 1050 (B. P. W.).
 M street N., crossing, No. 5 (Commsr.).
 Virginia avenue, No. 587 (Commsr.).
 S street (basin), No. 1171 (Commsr.).
 Lst. N. (automatic siphon), No. 1913 (Commsr.).
 K to L street N., No. 2206 (Commsr.).
 Woodley road to Kalorama avenue, No. 2394 (Commsr.).
 O to P street, d. l., 1883.
 Massachusetts ave. to Q st., east side, d. l., 1883.
 Massachusetts ave. to O st., east side, d. l., 1880.
 Florida avenue, d. l., 1886.
 N street, d. l., 1886.
 N to O street, d. l., 1887.
 O to P street, d. l., 1888, Repl.
 R to S street, d. l., 1888.
 New Hampshire avenue to O street, d. l., 1890.
 R to S street, d. l., 1890.
 Massachusetts avenue to Q street, d. l., 1891.
 E street to Virginia avenue, d. l., 1894, Repl.
 L to M street, d. l., 1894.
 O st. to Massachusetts ave. (basins) d. l., 1895.
 P street, automatic siphon, d. l., 1895.
 M street, crossing, d. l., 1897.
 G to H street, d. l., 1897.
 F to G street, d. l., 1897, Repl.
 H to I street, d. l., 1897.
 H street to Pennsylvania avenue, d. l., 1897.

Twenty-first street W.

G to H street, September 13, 1869 (C. W.).
 L to N street, May 3, 1871 (C. W.).
 B to D street, No. 400 (B. P. W. & C.).
 Pennsylvania avenue to Est., No. 408 (B. P. W.).
 K to L street, No. 496 (B. P. W.).
 Pennsylvania avenue to Kst., No. 506 (B. P. W.).
 L to M street, No. 525 (B. P. W.).
 New Hampshire ave. to Nst., No. 615 (B. P. W.).
 E street to Virginia avenue, No. 744 (B. P. W.).
 N street (basin), No. 616 (B. P. W. & C.).
 G to H street N., No. 639 (B. P. W.).
 K to L street, No. 1034 (B. P. W. & C.).
 K to L street, No. 5 (Commsr.).
 O street (basin), No. 728 (Commsr.).
 Q street (basin), No. 728 (Commsr.).
 P street (basins), No. 826 (Commsr.).
 R to S street, No. 1468 (Commsr.).
 O street, crossing, No. 1468 (Commsr.).
 Florida avenue, automatic siphon, No. 1913 (Commsr.).
 K to L street, No. 2206 (Commsr.).
 O to P street, east side, d. l., 1878.
 L to M street, west side, d. l., 1877.
 N to O street, east side, d. l., 1879.
 O to P street, east side, d. l., 1881.
 Q to R street, east side, d. l., 1882.
 P to Q street, d. l., 1882.
 K to L street, d. l., 1883.
 Mst. to New Hampshire ave., east side, d. l., 1883.
 Q to R street, east side, d. l., 1883.
 New Hampshire avenue to N street, d. l., 1887.
 R street to Florida avenue, d. l., 1888.
 Q to R street, d. l., 1887.
 O street to Massachusetts avenue, d. l., 1889.
 N to O street, d. l., 1892.
 N to O street, d. l., 1893.
 N to O street, d. l., 1894.
 R street to Florida avenue, d. l., 1894.
 C street to Virginia avenue, d. l., 1895, Repl.
 Massachusetts ave., automatic siphon, d. l., 1895.
 O to P street, d. l., 1896, Repl.
 R street N. (basin), northwest corner, d. l., 1896.

¹ Original sewer constructed under contract with B. P. W.

N to O street, d. l., 1897.
P to G street, d. l., 1897.
H to I street, d. l., 1897.

Twenty-second street W.

H to I street, September 13, 1869 (C. W.).
Est. to Pennsylvania ave., No. 348 (B. P. W.).
O to P street, No. 517 (B. P. W.).
P street to Massachusetts avenue, east side, No. 654 (B. P. W.).
L to M street, No. 729 (B. P. W.).
Virginia avenue to G street, No. 939 (B. P. W.).
M to N street, No. 380 (Commsrs.).
Virginia avenue to E street, No. 589 (Commsrs.).
N street (basin), No. 728 (Commsrs.).
L to M street, No. 730 (Commsrs.).
P street (basins), No. 826 (Commsrs.).
P street (basin), No. 1171 (Commsrs.).
K to L street, No. 1135 (Commsrs.).
Q street (basin), No. 1473 (Commsrs.).
Virginia ave. to D street, No. 1723 (Commsrs.).
G st., automatic siphon, No. 1913 (Commsrs.).
C to Water street, No. 2182 (Commsrs.).
New Hampshire avenue to N street (repair Slash Run) No. 2233 (Commsrs.).
M to N street, east side, d. l., 1883.
M to N street, d. l., 1885.
M to N street, d. l., 1887.
O street (basins), d. l., 1889.
K to L street, d. l., 1889.
Massachusetts avenue, d. l., 1890.
N to O street, d. l., 1890.
M to N street, d. l., 1891.
K to L street, d. l., 1892.
Massachusetts avenue to R street, d. l., 1892.
O street, d. l., 1893.
N to O street, d. l., 1893.
K to L street, d. l., 1894.
M to N street, d. l., 1895.
New York avenue to D street, d. l., 1895.
K to L street, d. l., 1896.
P to Q street, d. l., 1897.
New Hampshire avenue to N street (repair Slash Run), d. l., 1897.

Twenty-third street W.

G street to Washington circle, laterals, No. 403 (B. P. W.).
L to M street, No. 776 (B. P. W.).
L to M street, No. 589 (Commsrs.).
H to I street, No. 590 (Commsrs.).
L st. to Pennsylvania ave., east side, d. l., 1878.
L st. to Washington circle, east side, d. l., 1878.
G to H street, west side, d. l., 1879.
G to H street, d. l., 1885.
F to G street, d. l., 1886.
H to I street, d. l., 1885.
Sheridan Circle to Rock Creek, d. l., 1891.
F to G street, d. l., 1892.
New York ave. to Upper Water st., d. l., 1894.
M to N street, d. l., 1895.
L street to Washington circle, d. l., 1896.
Virginia avenue, SE. corner (basin), d. l., 1896.

Twenty-fourth street W.

Pennsylvania ave. to M st., No. 461 (B. P. W.).
L to M street, No. 829 (B. P. W.).
Virginia avenue to E street, No. 73 (Commsrs.).
M to N street, No. 1723 (Commsrs.).
I street, NE. and SE. corners (basins), d. l., 1897.
K to I street, d. l., 1897.

Twenty-fifth street W.

H to I street, No. 589 (Commsrs.).
M to N street, No. 954 (Commsrs.).
I to K street, d. l., 1884.
M to N street, d. l., 1892.
M to N street (basin), d. l., 1893.
I to K street, d. l., 1894.
M to N street, d. l., 1894.
M st. NE. and SE. corners (basins), d. l., 1897.

Twenty-sixth street W.

Virginia avenue to I street, No. 1723 (Commsrs.).
Pennsylvania avenue to M street, d. l., 1876.
Pennsylvania ave. to M st., east side, d. l., 1879.
Virginia avenue to I street, d. l., 1887.
P to Q street, d. l., 1889.
D to E street, d. l., 1894.
H to I street, d. l., 1894.
D to Upper Water street, d. l., 1894.
P to East street, d. l., 1894.
D to E street, d. l., 1895.
E to F street (basins), d. l., 1895.
O to P street, d. l., 1897.

Twenty-seventh street W.

K to L street, No. 899 (B. P. W.).
Poplar to O street, No. 954 (Commsrs.).
Olive to N street, No. 1506 (Commsrs.).
M to Olive street, No. 2220 (Commsrs.).
Olive street, d. l., 1889.
M to Olive street, d. l., 1892.
O street N., d. l., 1893.
N to Dumbarton street, d. l., 1893.
I street to Virginia avenue, d. l., 1894.
Poplar to P street, d. l., 1894.
O to Dumbarton street, d. l., 1897.
I to K street N., d. l., 1897, Repl.

Twenty-eighth street W.

Q to U street (automatic siphon), No. 1913 (Commsrs.).
Q to Road street, d. l., 1888.
Dumbarton to O street, d. l., 1893.
P to Q street, d. l., 1893.
O street (basin), d. l., 1894.
Olive to N street, d. l., 1894.
Dumbarton street, d. l., 1894.
Dumbarton to O st., both sides, d. l., 1895, Repl.
Pennsylvania avenue to Chesapeake and Ohio Canal, d. l., 1896.

Twenty-ninth street W.

P to Q street, No. 533 (B. P. W.).
Olive to Dumbarton street, No. 1900 (Commsrs.).
P to Q street, d. l., 1877.
P to U street, center of street, d. l., 1880.
Water street, d. l., 1886.
Q to U street, d. l., 1887.
Dumbarton street (basin), d. l., 1888.
K to M street, d. l., 1887.
Pennsylvania avenue to Chesapeake and Ohio Canal, d. l., 1894.

Thirtieth street W.

M to N street, No. 758 (B. P. W.).
M to Water street, No. 799 (B. P. W. & C.).
K street to Chesapeake and Ohio Canal, No. 860 (B. P. W.).
O street (basin), No. 1034 (B. P. W.).
P to Grace street, No. 242 (Commsrs.).
P to Q street, No. 479 (Commsrs.).
Q to Cambridge street, No. 1716 (Commsrs.).
O to P street, d. l., 1879.
P street, crossing, d. l., 1880.
N to Dumbarton street, d. l., 1889.
O to Dumbarton street, d. l., 1890.
O to Dumbarton street, d. l., 1892.
N to Dumbarton street, d. l., 1893.
Chesapeake and Ohio Canal to M street, d. l., 1894, Repl.
Chesapeake and Ohio Canal to M street (basin), d. l., 1896.

Thirty-first street W.

M to N street, No. 758 (B. P. W.).
N to P street, No. 859 (B. P. W.).
O to Q street, No. 591 (Commsrs.).
M to N street, No. 631 (Commsrs.).
O to U street, No. 631 (Commsrs.).
N to P street, No. 728 (Commsrs.).
N to Dumbarton street, west side, d. l., 1880.

¹ Original sewer constructed under contract with B. P. W.

K to M street, d. l., 1888.
Q to U street, d. l., 1890.
Q to U street, d. l., 1891.
M to N street, d. l., 1890.
U to V street, d. l., 1891.
M st. to Chesapeake and Ohio Canal, d. l., 1893.
Chesapeake and Ohio Canal to Water street,
d. l., 1894, Repl.
Chesapeake and Ohio Canal to M street, d. l.,
1894, Repl.
Chesapeake and Ohio Canal to K st., d. l., 1894.
O to P street N., d. l., 1894.

Thirty-second street W.

M to P street, No. 533 (B. P. W.).
M to Prospect street (basin), No. 701 (B. P. W.).
P street (basin), No. 1026 (B. P. W.).
S to T street, No. 1596 (Commsr.).
Thirty-third street, automatic siphon, No. 1913
(Commsr.).
R to Thirty-third street, west side, d. l., 1878.
U street, d. l., 1891.
Q street N., southwest corner (basin), d. l., 1895.
M to N street (basins), d. l., 1895.

Thirty-third street W.

O to P street, No. 418 (B. P. W.).
O street (basins), No. 728 (Commsr.).
N to P street, No. 728 (Commsr.).
P to R street, No. 820 (Commsr.).
R to T street, No. 956 (Commsr.).
Q street (basins), No. 957 (Commsr.).
R street (basin), No. 1256 (Commsr.).
M st. to Chesapeake and Ohio Canal, d. l., 1892.
Q street N., northeast corner (basin), d. l., 1895.
M st. to Chesapeake and Ohio Canal, d. l., 1896.

Thirty-fourth street W.

Prospect to M street, No. 1270 (Commsr.).
Prospect to N street, No. 826 (Commsr.).
Q street, N. (basin), No. 1256 (Commsr.).
O to P street, No. 1270 (Commsr.).
P to Q street, No. 1723 (Commsr.).
O to P street, west side, d. l., 1876.
N to O street, d. l., 1890.
M to N street, d. l., 1890.
U to Thirty-second street, d. l., 1891.
N to O street, d. l., 1894.
R to S street, d. l., 1895.
P to Q street, d. l., 1896.
N to O street, d. l., 1896.
Q to R street, d. l., 1897.
N to O street, d. l., 1897.

Thirty-fifth street W.

N to P street, No. 728 (Commsr.).
N street (basins), No. 728 (Commsr.).
O street (basins), No. 728 (Commsr.).
P street (basins), No. 728 (Commsr.).
P to Q street, No. 820 (Commsr.).
N to O street (basins), No. 957 (Commsr.).
Q street (basin), No. 1171 (Commsr.).
Q to S street, No. 1183 (Commsr.).
M to Prospect street, No. 1195 (Commsr.).
T street (basin), No. 1256 (Commsr.).
S to U street, No. 1270 (Commsr.).
Prospect street (automatic siphon), No. 1913
(Commsr.).
U to Madison street, No. 2368 (Commsr.).
O to P street, d. l., 1883.
N to O street, d. l., 1887.
N to O street, d. l., 1890.
U street (basins), d. l., 1891.
Q street, northwest corner (basin), d. l., 1895.
S street, northeast corner (basin), d. l., 1895.
N to O street, d. l., 1897.
T to U street, d. l., 1897.
U to V street, d. l., 1897.
U to W street, d. l., 1897.
U and Thirty-second streets, d. l., 1897.
U to Madison street, d. l., 1897.

Thirty-sixth street W.

Prospect to N street, No. 1270 (Commsr.).
N to O street, No. 1468 (Commsr.).
M to N street, d. l., 1896.

Thirtyseventh street W.

M to N street, No. 1596 (Commsr.).
Prospect st., northeast corner (basin), d. l., 1895.
N street, southwest corner (basin), d. l., 1896.

A street N.

Second street E., to Delaware avenue, October
11 and 24, 1867.
Second to Fourth st. E., No. 811 (B. P. W. & C.).
Eighth to Ninth street E., No. 811 (B. P. W.).
Third to Eighth street E., No. 589 (Commsr.).
Third to Fourth street, replacing, No. 826
(Commsr.).
Twelfth street to Tennessee avenue E., No. 954
(Commsr.).
Sixth to Seventh street E., north side, d. l., 1877.
Sixth to Seventh street E., south side, d. l., 1878.
Sixth to Seventh street E., north side, d. l., 1882.
Seventh to Eighth street E., south side, d. l.
1884.
Eleventh to Twelfth street E., d. l., 1886.
Seventh to Eighth street E., d. l., 1886.
Third to Fourth street E., d. l., 1889, Repl.
Eighth to Ninth street E., d. l., 1891.
Eleventh to Twelfth street E., d. l., 1891.
Eleventh to Twelfth street E., d. l., 1893.
Fifth to sixth street E., d. l., 1894.
Sixth to Seventh street E., siphon, d. l., 1894.
Second to Third street E., d. l., 1895, Repl.
Eighth, crossing, south side E., d. l., 1896, Repl.

A street S.

First to Second street E., No. 653 (B. P. W.).
Third to Sixth street E., north side, No. 811
(B. P. W.).
Sixth to Seventh st. E., No. 811 (B. P. W. & C.).
Seventh street E. (basins), No. 826 (Commsr.).
Eleventh to Twelfth st. E., No. 1716 (Commsr.).
Fourteenth to Fifteenth street E., No. 2184
(Commsr.).
Fourteenth street to Massachusetts avenue,
No. 2325 (Commsr.).
Eighth to Ninth street E., d. l., 1876.
Eighth to Ninth street E., d. l., 1885.
Eighth to Ninth street E., d. l., 1886.
Eighth to Ninth street E., d. l., 1887.
North Carolina avenue E., d. l., 1889.
Ninth street E., d. l., 1889.
Tenth street E., d. l., 1889.
Ninth to Tenth street E., d. l., 1889.
Seventh to Ninth street E. (basins), d. l., 1894.
Fourteenth street E. (basins), d. l., 1895.
Eighth to Ninth street E., d. l., 1896.
Third to Fourth street E., d. l., 1896, Repl.
Seventh to Eighth street E., d. l., 1897.

B street N.

Seventeenth street W., No. 330 (B. P. W. & C.).
Seventh to Seventeenth st. W., No. 330 (B. P. W.).
Sixth street W., crossing, No. 342 (B. P. W.).
First to Second street E., north side, No. 512
(B. P. W.).
Second to Third street E., No. 811 (B. P. W. & C.).
Seventeenth street W., No. 888 (B. P. W.).
Third to Fourth street E., No. 901 (B. P. W.).
Third to Fourth street E., No. 1006 (B. P. W.).
Seventh to Tenth street E., No. 589 (Commsr.).
Tenth to Eleventh street E., No. 593 (Commsr.).
Seventeenth street to Virginia avenue W., No.
601 (Commsr.).
Fourth to Sixth street E., No. 631 (Commsr.).
Twelfth street to Tennessee avenue, No. 954
(Commsr.).
Thirteenth to Fourteenth street E., No. 1270
(Commsr.).
Twelfth street to Tennessee avenue E., No.
1462 (Commsr.).
Eleventh to Twelfth st. E., No. 1596 (Commsr.).
Second street E., siphon, No. 1913 (Commsr.).
Fifteenth street to North Carolina avenue,
No. 2225 (Commsr.).
Sixth to Seventh street E., verbal order, 1876.
Delaware avenue to First street E., d. l., 1877.
New Jersey ave. to North Capitol st., d. l., 1878.
First to Second st. E., south side, d. l., 1879.
Fourth to Fifth street E., south side, d. l., 1883.

Sixth to Seventh street E., d. l. 1883.
 Ninth to Tenth street W., north side, d. l. 1883.
 First to Second street W., d. l. 1885.
 Eleventh to Thirteenth street, d. l. 1887.
 First to Second street E., d. l. 1888.
 North Capitol st. to Delaware ave., d. l. 1888.
 North Capitol st. to Delaware ave., d. l. 1889.
 North Capitol st. to Delaware ave., d. l. 1887.
 Third to Fourth street E., d. l. 1890, Repl.
 First street E., crossing, d. l. 1890, Repl.
 Eleventh to Twelfth street E., d. l. 1891.
 Thirteenth to Fourteenth street E., d. l. 1893.
 Tennessee avenue E. (basin), d. l. 1894.
 Third to Fourth street E., d. l. 1894, Repl.
 North Capitol street to Delaware avenue, siphon, d. l. 1894.
 North Capitol street to New Jersey avenue, siphon, d. l. 1894.

B street S.

Tenth to Eleventh street W., No. 885 (B. P. W.).
 First to Second street W., No. 231 (B. P. W.).
 Fifth to Sixth street E., No. 463 (B. P. W.).
 Third to Fifth street E., No. 519 (B. P. W.).
 Seventh to Fourteenth st. W., No. 683 (B. P. W.).
 South Capitol to First st. W., No. 743 (B. P. W.).
 First to Third street W., No. 775 (B. P. W. & C.).
 Second to Third street E., No. 829 (B. P. W.).
 Fifth to Sixth street E., No. 858X (B. P. W.).
 First to Second street E., No. 864 (B. P. W.).
 Eleventh street E., crossing, No. 1023 (B. P. W.).
 Sixth to Seventh street E., No. 5 (Comms.).
 South Capitol street to New Jersey avenue, No. 78 (Comms.).
 Sixth to Seventh street E., No. 730 (Comms.).
 Third to Fourth street E., No. 954 (Comms.).
 Ninth to Tenth street E., No. 504 (Comms.).
 Eleventh to Twelfth st. E., No. 1267 (Comms.).
 Fifth to Sixth street E., No. 1728 (Comms.).
 Sixth to Seventh street E., No. 1737 (Comms.).
 Twelfth street to Kentucky avenue, No. 1737 (Comms.).
 Fourteenth st. W., siphon, No. 1913 (Comms.).
 Nineteenth street E. to Eastern Branch, No. 2007 (Comms.).
 Thirteenth to Fourteenth street E., No. 2323 (Comms.).
 Sixth to Seventh street W., d. l. 1875.
 Sixth to Seventh street W., north side, d. l. 1876.
 Eleventh to Twelfth st. E., south side, d. l. 1876.
 Eleventh to Delaware ave., north side, d. l. 1877.
 Sixth to Seventh street E., north side, d. l. 1878.
 Thirteen-and-a-half to Fourteenth street W., d. l. 1878.
 First to Second street E., d. l. 1883.
 Tenth to Eleventh street E., d. l. 1886.
 Third to Four-and-a-half st. (basin), d. l. 1888.
 Sixth to Seventh street W., d. l. 1889.
 Delaware avenue to First street W., d. l. 1888.
 Third to Four-and-a-half street W., d. l. 1889.
 Sixth street E. (crossing), d. l. 1890.
 Eleventh to Twelfth street E., d. l. 1891, Repl.
 Delaware avenue to First street W., d. l. 1891.
 Sixth to Seventh street E., d. l. 1894.
 Tenth to Eleventh street E., d. l. 1894.
 Eighth to Ninth street E., d. l. 1894.
 Third to Fourth street E., d. l. 1895, Repl.
 Sixth to Seventh street E., d. l. 1895.
 Third to Fourth street E., d. l. 1896, Repl.
 Fifteenth to Sixteenth street E., d. l. 1896.
 Thirteenth to Fourteenth street E., d. l. 1897.
 Sixteenth to Seventeenth street E., d. l. 1897.

C street N.

Third to Sixth st. W., March 23, 1854 (C. W.).
 Four-and-a-half to Sixth street, August 16, 1860, May 29, and October 1, 1863 (C. W.).
 Second street E. to Thier Creek, both sides, No. 83 (B. P. W.).
 Fourth to Fifth street E., No. 550 (B. P. W.).
 Third to Four-and-a-half street W., No. 550 (B. P. W. & C.).
 Thirteenth to Thirteen-and-a-half street, No. 616 (B. P. W.).
 Second to Third street E., No. 858 (B. P. W.).
 Fourth to Fifth street E., No. 254 (Comms.).
 Third to Fourth street E., No. 569 (Comms.).
 Sixth to Seventh street E., No. 589 (Comms.).
 Seventh street E. (basin), No. 826 (Comms.).

Eighth street E. (basin), No. 826 (Comms.).
 Tenth street E. (basins), No. 826 (Comms.).
 Eighth to Tenth street E., No. 954 (Comms.).
 Second to Third street W., No. 954 (Comms.).
 Eighth to Ninth street E., No. 1165 (Comms.).
 Thirteenth street to Tennessee avenue E., No. 1270 (Comms.).
 First street W. (basin), No. 1473 (Comms.).
 New Jersey ave. W. (basin), No. 1473 (Comms.).
 Arthur Place W. (basin), No. 1473 (Comms.).
 Eleventh street E. (basin), No. 1473 (Comms.).
 New Jersey avenue to First street W., No. 1480 (Comms.).
 Sixth to Seventh street W., replacing, No. 1897 (Comms.).
 Second to Third st. W., north side, d. l. 1880.
 Fifth to Sixth streets E., d. l. 1881.
 Seventh to Eighth street E., d. l. 1881.
 Fifth to Sixth street W., south side, d. l. 1882.
 Sixth to Seventh st. W., north side, d. l. 1882.
 Seventh to Eighth street E., d. l. 1886.
 Fifth to Sixth street E., d. l. 1889.
 Second to Third st. E., both sides, d. l. 1889, Repl.
 Seventh to Eighth street E., d. l. 1889.
 Fifth to Sixth street E., d. l. 1889.
 Ninth to Tenth street E. (basin), d. l. 1890.
 Seventh to Eighth street E., d. l. 1890.
 Second to Third street W., d. l. 1890.
 Tenth to Eleventh street E., d. l. 1890.
 Second to Third street W., d. l. 1891.
 Seventh to Eighth street E., d. l. 1891.
 First street to Arthur place W., d. l. 1891.
 New Jersey avenue W., d. l. 1892.
 Arthur place W., d. l. 1892.
 Fifth to Sixth street E., d. l. 1893.
 Fourth to Fifth street E., d. l. 1893.
 Seventh to Eighth street E., d. l. 1894.
 Ninth to Tenth street E., d. l. 1894.
 Fourteenth to Fifteenth street W., d. l. 1895.
 Tenth to Eleventh street E., d. l. 1895.
 Tennessee ave. to Thirteenth st. E., d. l. 1896.
 Fourteenth to Fifteenth street E., d. l. 1896.
 Fourteenth to Warren street E., d. l. 1896.
 Thirteenth street E., crossing, d. l. 1896.
 Eleventh to Twelfth street E., d. l. 1897.

C street S.

New Jersey avenue to First street E., No. 88 (B. P. W.).
 Third to Fourth st. E., No. 264 (B. P. W. & C.).
 Sixth street W. to canal, No. 376 (B. P. W.).
 South Capitol to Second street E., No. 413 (B. P. W. & C.).
 Sixth to Seventh street W., No. 557 (B. P. W.).
 Third to Four-and-a-half street W., No. 559 (B. P. W.).
 New Jersey avenue to South Capitol street, No. 686 (B. P. W.).
 Seventh to Eighth street W., No. 713 (B. P. W.).
 Thirteen-and-a-half to Fourteenth street, No. 808 (B. P. W.).
 Seventh to Eighth street E., No. 835 (B. P. W.).
 Tenth to Virginia avenue E., No. 854 (B. P. W. & C.).
 Thirteenth to Thirteen-and-a-half street, No. 879 (B. P. W. & C.).
 Tenth to Eleventh street W., No. 1064 (B. P. W. & C.).
 Canal to Ninth street W., No. 386 (Comms.).
 Seventh to Ninth street E., No. 559 (Comms.).
 Fifth street E., crossing, No. 590 (Comms.).
 Sixth to Seventh street E., No. 590 (Comms.).
 Sixth street E., crossing, No. 593 (Comms.).
 Second to Third street E., No. 631 (Comms.).
 Seventh street E. (basin), No. 826 (Comms.).
 First street E. (basin), No. 826 (Comms.).
 Second street W. (basins), No. 826 (Comms.).
 First street W. (basins), No. 826 (Comms.).
 Ninth street E. (basins), No. 1171 (Comms.).
 Tenth street E. (basins), No. 1171 (Comms.).
 Eleventh street E. (basin), No. 1171 (Comms.).
 Twelfth street E. (basin), No. 1171 (Comms.).
 Fourteenth to Fifteenth street W., No. 1468 (Comms.).
 Twelfth to Thirteenth street W., No. 1468 (Comms.).
 Third to Fourth street E., No. 1723 (Comms.).
 Ninth to Tenth street E., replacing, No. 1896 (Comms.).

Third street to James Creek Canal W., No. 1896 (Commsrs.).
 Ninth to Tenth street W., replacing, No. 1897 (Commsrs.).
 Third street to Canal W., No. 1900 (Commsrs.).
 First to Second street E., siphon, No. 1913 (Commsrs.).
 Tenth to Eleventh street W., d. l. 1876.
 Twelfth to Thirteenth street E., north side, d. l. 1876.
 Ninth to Tenth street E., d. l. 1877.
 First to Second street E., south side, d. l. 1878.
 Eighth to Ninth street E., north side, d. l. 1879.
 Twelfth to Thirteenth street W., north side, d. l. 1879.
 Ninth to Tenth street W., d. l. 1880.
 Seventh to Eighth street W., south side, d. l. 1881.
 Ninth to Tenth st. W., north side, d. l. 1882.
 Sixth to Seventh street E., d. l. 1884.
 Tenth to Eleventh street E., d. l. 1885.
 Delaware avenue W., crossing, d. l. 1885.
 First to Second street E., d. l. 1885.
 Ninth to Tenth street E., d. l. 1887.
 Sixth to Seventh street E., d. l. 1887.
 Twelfth street E., crossing, d. l. 1888.
 Thirteen-and-a-half and Fourteenth streets, d. l. 1888, Repl.
 Fourteenth to Fifteenth street W., d. l. 1888.
 Thirteen-and-a-half to Fourteenth street, d. l. 1889, Repl.
 Second to Third street E., d. l. 1889.
 Twelfth to Thirteenth street W., d. l. 1889.
 Eleventh to Twelfth street E., d. l. 1890.
 Twelfth to Thirteenth street W., d. l. 1890.
 Fourteenth street W., crossing, d. l. 1891.
 Second to Third street E., d. l. 1891, Repl.
 Thirteenth to Thirteen-and-a-half st., d. l. 1892.
 Third to Fourth street E., d. l. 1893.
 Tenth to Eleventh street W., d. l. 1894, Repl.
 Canal to Delaware avenue W., d. l. 1894.
 Third to Fourth street E., d. l. 1894.
 Ninth to Tenth street E., d. l. 1895.
 South Capitol st. to New Jersey ave., d. l. 1895.
 Fourteenth to Fifteenth street E., d. l. 1895.
 Fourteenth st. to Kentucky ave. E., d. l. 1895.
 Thirteenth st. to Kentucky ave. E., d. l. 1895.
 Eleventh to Twelfth street E., d. l. 1896.
 First street E. to New Jersey avenue, d. l. 1897.
 Eleventh to Twelfth street E., d. l. 1897.

D street N.

Sixth to Seventh street W., May 23, 1863 (C. W.).
 Fifth to Sixth st., and from City Hall to S.W. corner of reservation, July 27, 1865 (C. W.).
 Sixth to Seventh street, October 26, 1865 (C. W.).
 New Jersey avenue to Second street W., November 10, 1865 (C. W.).
 Second to Third street W., May 14, 1866, and May 10, 1867 (C. W.).
 Fifth to Sixth st. W., November 15, 1870 (C. W.).
 Second street E., crossing, No. 243 (B. P. W.).
 Sixth to Eleventh street W., No. 202 (B. P. W.).
 Ninth to Tenth street W., No. 387 (B. P. W.).
 Thirteenth to Fifteenth street W., both sides, No. 516 (B. P. W.).
 Twelfth to Thirteenth st. W., No. 728 (B. P. W.).
 Seventh street E., crossing, No. 811 (B. P. W.).
 First street W., to First street E., No. 1047 (B. P. W. & C.).
 Seventeenth to Eighteenth street W., No. 91 (Commsrs.).
 Fourteenth to Fifteenth street W., No. 730 (Commsrs.).
 Fifth to Seventh street E., No. 826 (Commsrs.).
 Delaware ave. to First st. E., No. 956 (Commsrs.).
 First to Second street E., No. 1169 (Commsrs.).
 First street E., crossing, No. 1183 (Commsrs.).
 Eighth street E. (basin), No. 1256 (Commsrs.).
 Ninth street E. (basin), No. 1256 (Commsrs.).
 Fourth to Fifth street E., No. 1468 (Commsrs.).
 Ninth street E., No. 1472 (Commsrs.).
 Twenty-first to Twenty-second street W., No. 1723 (Commsrs.).
 Eleventh to Twelfth st. E., No. 1797 (Commsrs.).
 Seventeenth to Eighteenth st. W., d. l. 1876.
 Fourth to Fifth street E., south side, d. l. 1881.
 Eighth street E., crossing, d. l. 1882.
 Seventh to Eighth st. E., south side, d. l. 1883.

Third to Fourth street W., d. l. 1888.
 Third to Fourth street E., d. l. 1889.
 Fifth to Sixth street E., d. l. 1889.
 Eighth to Ninth street E., d. l. 1890.
 Eighth to Ninth street W., d. l. 1890, Repl.
 Seventh to Eighth street E., d. l. 1890.
 Seventh to Eighth street E., d. l. 1893.
 Second st. E. to Massachusetts ave., d. l. 1894.
 Twenty-sixth street W. to river, d. l. 1894.
 Thirteenth to Fourteenth street E., d. l. 1895.
 Ninth to Tenth street W., d. l. 1895.
 Twenty-first to Twenty-second st. W., d. l. 1895.
 Second to Third street W., d. l. 1895.
 Twelfth to Thirteenth street E., d. l. 1895.
 First street W. (basin), d. l. 1895.
 Thirteenth to Fourteenth street E., d. l. 1895.
 Thirteenth street E. (basin), d. l. 1895.
 Twenty-sixth st. W. to river (basin), d. l. 1895.
 Eighth to Ninth street W. (basins), d. l. 1895.
 Tenth to Eleventh street E., d. l. 1896.
 Seventeenth to Eighteenth street W., d. l. 1896.
 Third to Fourth street E., d. l. 1896.
 Seventh to Eighth street E., d. l. 1897.
 Sixth to Seventh street E., d. l. 1897.

D street S.

Second street E., August 21, 1859 (C. W.).
 North Carolina avenue to Second street, November 29, 1869 (C. W.).
 Four-and-a-half to Sixth street W., May 24, 1871, not constructed (C. W.).
 South Capitol to Fifth st. E., No. 65 (B. P. W.).
 Second street E., No. 264 (B. P. W.).
 Third to Sixth street E., No. 264 (B. P. W.).
 Twelfth to Thirteenth st. W., No. 333 (B. P. W.).
 Third to Four-and-a-half street W., No. 376 (B. P. W.).
 Seventh to Fourteenth st. W., No. 808 (B. P. W.).
 Sixth to Seventh street W., No. 884 (B. P. W.).
 Seventh to Eighth street W., No. 925 (B. P. W.).
 Second to Third st. E., No. 1034 (B. P. W. & C.).
 Second to Third street E., No. 1072 (B. P. W.).
 Seventh to Eighth street E., No. 1072 (B. P. W.).
 Sixth to Seventh street E., north side, No. 1084 (B. P. W.).
 Second to Third street E., No. 5 (Commsrs.).
 Four-and-a-half street to Virginia avenue, No. 386 (Commsrs.).
 Delaware avenue to First street W., No. 479 (Commsrs.).
 Second to Third street W., No. 589 (Commsrs.).
 Eighth to Ninth street E., No. 589 (Commsrs.).
 First to Second street W., No. 591 (Commsrs.).
 First to Second street W., No. 631 (Commsrs.).
 Sixth to Seventh street W., No. 631 (Commsrs.).
 Eighth street W., crossing, No. 631 (Commsrs.).
 Sixth to Ninth street W., No. 730 (Commsrs.).
 Ninth to Tenth street E., No. 730 (Commsrs.).
 Third to Four-and-a-half street W., No. 954 (Commsrs.).
 Twelfth to Fourteenth street E., No. 1270 (Commsrs.).
 Third to Four-and-a-half street, replacing, No. 1750 (Commsrs.).
 Seventh street W., siphon, No. 1913 (Commsrs.).
 Sixth to Seventh street E., south side, d. l. 1878.
 Ninth to Tenth street E., south side, d. l. 1878.
 Tenth to Eleventh st. W., south side, d. l. 1882.
 Sixth to Seventh street E., d. l. 1887.
 South Capitol street, d. l. 1888.
 Eleventh to Twelfth street E., d. l. 1890.
 Delaware avenue, crossing, d. l. 1890.
 South Capitol st. to Delaware ave., d. l. 1891.
 Eighth to Ninth street E., d. l. 1891.
 Fifth to Sixth street E., d. l. 1892.
 Second to Third street W., d. l. 1893.
 Twelfth street E., crossing, d. l. 1894.
 Thirteen-and-a-half to Fourteenth street, d. l. 1894, Repl.
 Tenth to Eleventh street E., d. l. 1894.
 Tenth to Eleventh street E., d. l. 1895.
 Eighth to Ninth street E., d. l. 1895.
 New Jersey avenue to First street E., d. l. 1896.
 Thirteenth to Fourteenth street E., d. l. 1896.
 South Capitol street, intersection of, d. l. 1896.

E street N.

Sixth to Seventh st. W., May 23, 1863 (C. W.).
 Second to Third street W., July 8, 1865 (C. W.).

Twelfth to Thirteenth street W., October 6, 1865 (C. W.).
 Sixth to Seventh street W., December 8 and 16, 1865 (C. W.).
 Thirteenth to Fourteenth street W., May 16, 1866 (C. W.).
 Second street W. to Tiber Creek, May 23, 1867 (C. W.).
 Twelfth to Thirteenth street W., November 21, 1868 (C. W.).
 Tenth to Thirteenth st. W., No. 75 (B. P. W.).
 Thirteenth to Fourteenth street W., No. 222 (B. P. W.).
 Ninth to Tenth street W., No. 202 (B. P. W.).
 Seventh to Ninth street W., No. 346 (B. P. W.).
 Second to Fourth st. W., No. 371 (B. P. W.).
 Eighteenth to Twenty-second street W., No. 374 (B. P. W.).
 Fourteenth to Fifteenth street W., south side, No. 516 (B. P. W.).
 Thirteenth to Fourteenth street, south side, No. 616 (B. P. W.).
 Fifth to Seventh street W., No. 735 (B. P. W.).
 Seventeenth to Eighteenth street W., No. 797 (B. P. W.).
 North Capitol to First st. E., No. 1047 (B. P. W.).
 Twenty-third to Twenty-fourth street W., No. 73 (Comms.).
 Twenty-second to Twenty-third street W., No. 589 (Comms.).
 Fourth to Fifth street E., No. 590 (Comms.).
 Second to Third street E., No. 631 (Comms.).
 Third to Fourth street W., No. 730 (Comms.).
 Nineteenth to Twentieth street W., No. 730 (Comms.).
 North Capitol street to New Jersey avenue, No. 826 (Comms.).
 North Capitol to First street W. (basins), No. 826 (Comms.).
 Eighteenth to Nineteenth street W., No. 954 (Comms.).
 Thirteenth to Fourteenth street W. (basins), No. 967 (Comms.).
 Seventeenth to Eighteenth street W., No. 1468 (Comms.).
 Ninth to Tenth street E., No. 1723 (Comms.).
 Thirteenth street to Tennessee avenue E., No. 2246 (Comms.).
 First to Second street E., d. l. 1877.
 North Capitol street, d. l. 1879.
 Fifteenth street W. (crossing), d. l. 1884.
 Eighteenth to Nineteenth street W., south side, d. l. 1885.
 Twentieth to Twenty-first street W., north side, d. l. 1885.
 Delaware avenue (basin) d. l. 1885.
 Fifth to Sixth street E., d. l. 1886.
 Third to Fourth street E., d. l. 1886.
 Twentieth to Twenty-first street W., d. l. 1887.
 Eighth to Ninth street E., d. l. 1887.
 Twentieth to Twenty-first street W., d. l. 1888.
 Twenty-second to Twenty-third st. W., d. l. 1889.
 Third to Fourth street E., d. l. 1889.
 Sixteenth to Nineteenth street E., d. l. 1889.
 Eighteenth to Nineteenth street W., d. l. 1889.
 Twenty-second to Twenty-third st. W., d. l. 1889.
 Eighth to Ninth street E., d. l. 1890.
 Third to Fourth street E., d. l. 1890.
 Third to Fourth street E., d. l. 1891.
 Sixth to Seventh street E., d. l. 1891.
 Second to Third street E., d. l. 1892.
 Thirteenth to Fourteenth street W., d. l. 1892.
 Fifth to Sixth street E., d. l. 1892.
 North Capitol to First street W., d. l. 1893.
 Seventeenth to Eighteenth street W., d. l. 1893.
 Twenty-sixth street W. to river, d. l. 1894.
 Twenty-first to Twenty-second st. W., d. l. 1894.
 Twentieth to Twenty-first street W., d. l. 1892.
 Twentieth to Twenty-first street W., d. l. 1894.
 Eighth to Ninth street E., d. l. 1894.
 Third to Fourth street E., d. l. 1895.
 Twenty-sixth street to river, d. l. 1895.
 Eleventh to Twelfth street E., d. l. 1895.
 Seventh to Eighth street E., d. l. 1897.
 Fifth to Sixth street E., d. l. 1897.

E street S.

Delaware avenue to South Capitol street W., October 27, 1869 (C. W.).

Second to Third street E., No. 264 (B. P. W.).
 Four-and-a-half to Sixth st. W., No. 369 (B. P. W.).
 Third to Four-and-a-half st. W., No. 376 (B. P. W.).
 Four-and-a-half to Sixth street, north side, No. 539 (B. P. W.).
 Fourth street, crossing, No. 833 (B. P. W.).
 Seventh street, crossing, No. 1072 (B. P. W.).
 Four-and-a-half and Sixth streets, No. 431 (Comms.).
 Second to Third street W., No. 589 (Comms.).
 Delaware avenue to South Capitol street No. 593 (Comms.).
 Third to sixth street E., No. 631 (Comms.).
 Delaware avenue to Second street W., No. 631 (Comms.).
 Delaware avenue (basin), No. 728 (Comms.).
 Sixth to Seventh street E., No. 730 (Comms.).
 Seventh to Eighth street W., No. 826 (Comms.).
 Seventh street W. (basins), No. 826 (Comms.).
 Thirteenth st. W. (basin), No. 826 (Comms.).
 Thirteen-and-a-half st. W., No. 826 (Comms.).
 South Capitol street to New Jersey avenue, No. 952 (Comms.).
 Ninth to Tenth street W., No. 954 (Comms.).
 Tenth to Eleventh st. E., No. 954 (Comms.).
 Twelfth to Thirteenth street E., No. 1270 (Comms.).
 Seventh to Eighth st. E., No. 1468 (Comms.).
 Twelfth to Thirteenth street E., No. 1468 (Comms.).
 First to Second street E., No. 1715 (Comms.).
 Thirteenth to Fourteenth street E., No. 1797 (Comms.).
 Thirteenth st. E. (siphon), No. 1913 (Comms.).
 Third to Four-and-a-half street W., No. 2361 (Comms.).
 Tenth to Eleventh st. W., north side, d. l. 1876.
 Four-and-a-half to Sixth street W., south side, d. l. 1876.
 Sixth to Seventh st. W., south side, d. l. 1877.
 Seventh to Eighth st. E., north side, d. l. 1878.
 Sixth to Seventh st. E., south side, d. l. 1879.
 Eighth to Ninth st. E., south side, d. l. 1882.
 Eleventh to Twelfth street E., d. l. 1886.
 Second to Third street E., d. l. 1886.
 Four-and-a-half to Sixth street W., d. l. 1887.
 Ninth to Tenth street W., d. l. 1887.
 Eighth to Ninth street E., d. l. 1887.
 Sixth to Seventh street E., d. l. 1889.
 Sixth to Seventh street W. (basin), d. l. 1890.
 Twelfth to Thirteenth street E., d. l. 1890.
 Thirteenth to Thirteen-and-a-half st., d. l. 1890.
 Eighth to Ninth street E., d. l. 1892.
 Ninth to Tenth street W., d. l. 1893.
 Third to Fourth street E., d. l. 1893.
 Ninth to Tenth street E., d. l. 1894.
 Six-and-a-half to Seventh street W., d. l. 1895.
 Eighth to Ninth street W., d. l. 1895.
 Thirteenth to Fourteenth street E., d. l. 1896.
 Eighth to Ninth street W., d. l. 1897.
 Thirteenth to Fourteenth street E., d. l. 1897.

F street N.

Fourteenth to Fifteenth street W., March 31, 1868 (C. W.).
 Eighteenth to Twenty-second street, November 2, 1869 (C. W.), not constructed.
 Eleventh to Twelfth st. W., No. 351 (B. P. W.).
 Second to Fourth street W., No. 371 (B. P. W.).
 North Capitol to Fifth st. E., No. 570 (B. P. W.).
 Second to Third st. E., No. 702 (B. P. W. & C.).
 Fifth to Seventh street W., No. 740 (B. P. W.).
 Sixth to Seventh street W., No. 835 (B. P. W.).
 First to Second street W., No. 700 (B. P. W.).
 First to Second st. W., No. 600 (B. P. W. & C.).
 Ninth to Thirteenth st. W., No. 796 (B. P. W.).
 Seventh street E. crossing, No. 811 (B. P. W.).
 North Capitol street to New Jersey avenue, No. 1040 (B. P. W.).
 First to Second street E., No. 51 (Comms.).
 Twenty-third to Twenty-fourth street W., No. 500 (Comms.).
 Third to Fourth street E., No. 600 (Comms.).
 Fourth to Seventh st. E., No. 601 (Comms.).
 North Capitol street, near, No. 728 (Comms.).
 Eighth to Ninth street E., No. 954 (Comms.).
 Ninth to Tenth street E., No. 1169 (Comms.).
 Seventh to Eighth st. E., No. 1183 (Comms.).

Twenty-sixth to Twenty-seventh street W., No. 1267 (Commsrs.).
 Twenty-fourth to Twenty-sixth street W., No. 1270 (Commsrs.).
 Twenty-fourth to Twenty-fifth street W., No. 1715 (Commsrs.).
 First to Second street W., No. 1716 (Commsrs.).
 North Capitol to First street W., No. 1728 (Commsrs.).
 Fourteenth street to Tennessee avenue E., No. 1898 (Commsrs.).
 Fifth to Sixth street W., d. l. 1877.
 Second to Third st. E., north side, d. l. 1878.
 Thirtieth to Fourteenth street W., north side, d. l. 1879.
 Eleventh to Twelfth street W., south side, d. l. 1884.
 Ninth to Tenth st. W., north side, d. l. 1882.
 Virginia avenue W., crossing, d. l. 1885.
 Virginia ave. to Twenty-second st. W., d. l. 1886.
 Third to Fourth street W., d. l. 1887.
 Twelfth to Thirteenth street E., d. l. 1888.
 Hancock avenue (basin), d. l. 1889.
 Seventh to Eighth street E., d. l. 1889.
 Ninth to Tenth street E., d. l. 1889.
 Fifth to Sixth street E., d. l. 1890.
 Fifth to Seventh street W., d. l. 1890.
 Fourteenth to Fifteenth street W., d. l. 1891.
 Eleventh to Twelfth street E., d. l. 1891.
 Twelfth to Thirteenth street W., d. l. 1891.
 Second to Third street E., d. l. 1892.
 Florence place to Tennessee avenue, d. l. 1892.
 First to Second street E., d. l. 1892.
 Eleventh to Twelfth street W., d. l. 1892.
 Tenth street E., crossing, d. l. 1893.
 Eleventh to Twelfth street W., d. l. 1893.
 Fourteenth st. to Tennessee ave., d. l. 1893.
 Twenty-second to Twenty-third st., d. l. 1893.
 Twenty-third to Twenty-sixth st. W., d. l. 1894.
 Twenty-second to Twenty-third street W., d. l. 1894.
 First to Second street E., d. l. 1895.
 Second to Third street E., d. l. 1895.
 North Capitol st. to New Jersey ave., d. l. 1896.
 Seventh street W., near (basin), d. l. 1896.
 Eleventh to Twelfth street E., d. l. 1897.
 Nineteenth to Twenty-first street W.,¹ d. l. 1897, Repl.
 Twelfth to Thirteenth street E., d. l. 1897.
 Tenth to Eleventh street E., d. l. 1897.
 Fourteenth street W., d. l. 1897.

F street S.

Third to Four-and-a-half street W., No. 376 (B. P. W.).
 Sixth to Seventh street W., north side, No. 539 (B. P. W.).
 Third to Seventh st. W., No. 835 (B. P. W. & C.).
 Third to Seventh street W., No. 837 (B. P. W.).
 Seventh to Ninth street W., contract number not known (B. P. W.).
 Eighth to Tenth street W., No. 589 (Commsrs.).
 First to Third street W., No. 589 (Commsrs.).
 One-half street to Delaware avenue W., No. 589 (Commsrs.).
 Tenth to Eleventh st. W., north side, d. l. 1880.
 Sixth to Seventh st. W., south side, d. l. 1883.
 Eighth to Ninth street W., d. l. 1886.
 Sixth to Seventh street W., d. l. 1890.
 Four-and-a-half to Sixth st. W., d. l. 1891; Repl.
 Tenth to Eleventh street W., d. l. 1894.

G street N.

Fourth to Fifth street, May 26, 1841 (C. W.).
 Fifth to Sixth street W., August 16, 1853, September 9, 1857 (C. W.).
 Fourteenth to Fifteenth street W., October 26, 1865 (C. W.).
 Eighteenth to Twenty-first street, September 13, 1869 (C. W.). Constructed from Twentieth to Twenty-first street.
 Twelfth to Thirteenth street, October 9, 1869, January 3, 1870 (C. W.).
 Fifth to Sixth street. See Indiana avenue.

Fourth to Fifth street W., north side, No. 204 (B. P. W.).
 Ninth to Thirteenth st. W., No. 233 (B. P. W.).
 New Jersey avenue to Seventh street W., No. 233 (B. P. W.).
 Nineteenth to Twentieth street W., No. 284 (B. P. W.).
 Twenty-second street to Potomac River, No. 645 (B. P. W.).
 Fifth to Thirteenth st. E., No. 702 (B. P. W.).
 Maryland avenue to Fifteenth street E., No. 702 (B. P. W. & C.).
 Second to Third st. E., No. 702 (B. P. W. & C.).
 Eighth to Ninth st. E., No. 727 (B. P. W. & C.).
 North Capitol to First st. W., No. 821 (B. P. W.).
 North Capitol to First st. E., No. 51 (Commsrs.).
 North Capitol to Second street E., No. 589 (Commsrs.).
 New Jersey ave., crossing, No. 590 (Commsrs.).
 Massachusetts avenue, crossing, No. 593 (Commsrs.).
 Delaware avenue to Second street E., No. 826 (Commsrs.).
 North Capitol to First street E. (basins), No. 826 (Commsrs.).
 North Capitol street (basin), No. 826 (Commsrs.).
 Delaware avenue E. (basin), No. 826 (Commsrs.).
 Delaware avenue to Second street E., No. 954 (Commsrs.).
 Thirteenth street to Maryland avenue E., No. 1170 (Commsrs.).
 Fourth to Fifth street E., No. 1195 (Commsrs.).
 Sixth to Seventh street E. (basin), No. 1256 (Commsrs.).
 Twelfth to Thirteenth street W., No. 1715 (Commsrs.).
 North Capitol to First street W., No. 1750 (Commsrs.).
 New Jersey avenue to Second street, north side, d. l. 1876.
 North Capitol to First street W., south side, d. l. 1877.
 Delaware avenue, crossing, d. l. 1878.
 Thirteenth to Fourteenth street E., d. l. 1878.
 Second to Third street W., d. l. 1880.
 North Capitol to First street W., south side, d. l. 1881.
 Tenth to Eleventh street W., d. l. 1883.
 Third to Fourth street W., d. l. 1886.
 Fourteenth to Fifteenth street E., d. l. 1886.
 Fourth to Fifth street E., d. l. 1887.
 Twenty-first to Twenty-second street W., d. l. 1887.
 Thirteenth to Fourteenth street E., d. l. 1889.
 Seventh to Eighth street W.,² d. l. 1889, Repl.
 Second to Third street E., d. l. 1889.
 Twenty-fourth to Twenty-fifth street W., d. l. 1889.
 Fifteenth street W. (basin), d. l. 1891.
 North Capitol to First street W., d. l. 1891, Repl.
 Third to Fourth street E., d. l. 1891.
 Eighteenth street W., crossing, d. l. 1892.
 Fourth to Fifth street E., d. l. 1892.
 Second street E., crossing, d. l. 1893.
 North Capitol to First st. W., d. l. 1893, Repl.
 Florence street (basin), d. l. 1894.
 Eighteenth to Nineteenth street W., d. l. 1894.
 Twenty-fourth st. to Virginia ave. W., d. l. 1894.
 Tenth to Eleventh street W. (basins), d. l. 1894.
 Tenth to Eleventh street W., d. l. 1896.
 Twelfth to Thirteenth street W., d. l. 1896.
 Tenth to Fourteenth street W., d. l. 1896.
 Fifth to Sixth street E., d. l. 1896.
 Sixth to Seventh street E., d. l. 1897.
 Fourteenth to Fifteenth street E., d. l. 1897.
 Twentieth to Twenty-first street W., d. l. 1897.
 Third to Fourth street E., d. l. 1897.
 Ninth to Tenth street W., d. l. 1897.

G street S.

Third to Four-and-a-half street W., No. 376 (B. P. W.).
 Seventh to Eighth street W., No. 501 (B. P. W.).
 Four-and-a-half to Sixth street W., No. 803 (B. P. W.).

¹ Original sewer constructed under contract with C. W.

² No record of original construction of sewer in this street.

Third to Fourth street E., No. 819 (B. P. W.).
 Four-and-a-half to Eleventh street W., No. 851
 (B. P. W.).
 Four-and-a-half to Eleventh street W., No. 1063
 (B. P. W.).
 Seventh street, crossing, No. 1072 (B. P. W.).
 First to Canal street W., No. 533 (Commsrs.).
 Third street to Delaware avenue W., No. 584
 (Commsrs.).
 Eighth to Ninth street E., No. 589 (Commsrs.).
 Sixth to Seventh street E., No. 589 (Commsrs.).
 Ninth to Tenth street E., No. 631 (Commsrs.).
 Seventh to Eighth street E., No. 631 (Commsrs.).
 Third to Sixth street E., No. 631 (Commsrs.).
 Twelfth to Thirteenth st. E., No. 730 (Commsrs.).
 Eleventh street E., (basins), No. 457 (Commsrs.).
 Eleventh to Twelfth st. E., No. 1468 (Commsrs.).
 Third to Four-and-a-half street, W., No. 1723
 (Commsrs.).
 Sixth to Eighth street E., No. 1797 (Commsrs.).
 Thirteenth st. E., siphon, No. 1913 (Commsrs.).
 Third to Four-and-a-half street W., Repl., No.
 1921 (Commsrs.).
 Seventh to Eighth st. E., south side, d. l., 1880.
 Sixth to Seventh st. E., north side, d. l., 1882.
 Fourth to Fifth street E., d. l., 1887.
 Twelfth to Thirteenth street E., d. l., 1887.
 Tenth to Eleventh street E., d. l., 1888.
 Twelfth to Thirteenth street E., d. l., 1889.
 Tenth to Eleventh street E., d. l., 1890.
 Eleventh to Thirteenth street E., d. l., 1891.
 Eleventh to Twelfth street E., d. l., 1893.
 Third to Four-and-a-half st. W., d. l., 1893, Repl.
 Ninth to Tenth street E., d. l., 1895.
 Tenth to Eleventh street E., d. l., 1895.
 Four-and-a-half to Sixth st. W., d. l., 1895, Repl.
 Four-and-a-half to Sixth street W., (basins), d.
 l., 1895.
 Third to Four-and-a-half st. W., d. l., 1895, Repl.
 Four-and-a-half st. W., crossing, d. l., 1895, Repl.
 Sixth to Seventh street E., d. l., 1896, Repl.
 Fourteenth to Fifteenth street E., d. l., 1896.
 Eleventh to Twelfth street E., d. l., 1897.
 Sixth to Seventh street W., d. l., 1897, Repl.
 Pennsylvania avenue to Fourteenth street E.,
 d. l., 1897.

H street N.

Fourth to Fifth st., September 17, 1835 (C. W.).
 Sixth to Eighth street W., May 6, 1838 (C. W.).
 Eighteenth to Nineteenth street, May 16, 1867
 (C. W.).
 Seventeenth to Eighteenth street, May 16, 1867
 (C. W.).
 Twenty-first to Twenty-second street, Sep-
 tember 13, 1869 (C. W.).
 Eighth to Ninth street W., May 2, 1871 (C. W.).
 Sixteenth to Seventeenth street, rear of, act of
 Congress March 2, 1867.
 Twenty-third to Twenty-fourth street, No. 21
 (B. P. W. & C.).
 First to Third street W., No. 24 (B. P. W.).
 North Capitol to First st. W., No. 24 (B. P. W.).
 Twelfth to Thirteenth st. W., No. 62 (B. P. W.).
 Seventh to Twelfth st. W., No. 62 (B. P. W.).
 Eighth to Ninth street W., No. 62 (B. P. W.).
 Thirteenth to Fourteenth street W., No. 249
 (B. P. W.).
 Fifteenth street E., No. 279 (B. P. W. & C.).
 North Capitol to First street W., No. 572
 (B. P. W.).
 Fifteenth street to Vermont avenue W., No.
 636 (B. P. W.).
 Second to Third st. E., No. 702 (B. P. W. & C.).
 Ninth street E., (basin), No. 702 (B. P. W. & C.).
 Thirteenth street E., No. 702 (B. P. W.).
 North Capitol street, No. 51 (Commsrs.).
 North Capitol to First st. E., No. 51 (Commsrs.).
 Fourth to Fifth street W., No. 440 (Commsrs.).
 Fourth to Sixth street W., No. 249 (Commsrs.).
 North Capitol street to New Jersey avenue
 No. 479 (Commsrs.).
 North Capitol to First street E., No. 587
 (Commsrs.).
 Tenth to Eleventh st. E., No. 589 (Commsrs.).
 New Hampshire avenue to Twenty-fifth st.,
 No. 589 (Commsrs.).
 Third to Fourth street E., No. 589 (Commsrs.).
 North Capitol to Second street E., No. 589
 (Commsrs.).

Twenty-fourth street to New Hampshire ave-
 nue, No. 590 (Commsrs.).
 North Capitol to First st. E., No. 591 (Commsrs.).
 Third to Fourth street E., No. 631 (Commsrs.).
 Tenth to Eleventh street E., No. 631 (Commsrs.).
 Fourth to Fifth street W., (basins), No. 728
 (Commsrs.).
 Sixth street W., (basins), No. 728 (Commsrs.).
 First st. to Delaware av. E., No. 730 (Commsrs.).
 Second to Third street E., No. 730 (Commsrs.).
 Fifth to Sixth street E., No. 730 (Commsrs.).
 Ninth street E., crossing, No. 730 (Commsrs.).
 Eighth to Ninth street E., No. 730 (Commsrs.).
 Ninth to Tenth street W., No. 826 (Commsrs.).
 Fifth to Seventh street E., No. 826 (Commsrs.).
 Thirteenth to Fourteenth street E., No. 826
 (Commsrs.).
 Delaware avenue to Second street E., No. 954
 (Commsrs.).
 Eleventh to Twelfth st. E., No. 1270 (Commsrs.).
 Florida av. to Eighth st. E., No. 1479 (Commsrs.).
 Seventh to Eighth st. E., No. 1728 (Commsrs.).
 Tenth to Eleventh st. E., south side, d. l., 1878.
 Sixth to Seventh street E., north side, d. l., 1878.
 Fourth to Fifth street W., d. l., 1879.
 Ninth to Tenth street W., south side, d. l., 1880.
 Fifth to Sixth street W., north side, d. l., 1881.
 Fourth to Fifth street W., south side, d. l., 1880.
 Fourth to Fifth street W., north side, d. l., 1882.
 Twenty-second to Twenty-third street W., d. l.,
 1882.

Fifth to Sixth street W., north side, d. l., 1884.
 Ninth to Tenth street W., south side, d. l., 1883.
 Eighth to Ninth street E., d. l., 1886.
 Twelfth to Thirteenth street E., d. l., 1887.
 Thirteenth to Fourteenth street E., d. l., 1888.
 Fourteenth st. to Florida ave. E., d. l., 1888.
 First to Second street W., d. l., 1889, Repl.
 Fifteenth street E., d. l., 1889.
 Nineteenth to Twentieth street W., d. l., 1889.
 Fourth to Fifth street W., d. l., 1890.
 Seventeenth to Eighteenth st. W., d. l., 1890.
 Fifth to Sixth street E., d. l., 1890.
 Fourth to Fifth street E., d. l., 1891.
 North Capitol to First st. E., d. l., 1892, Repl.
 Seventh street E., crossing, d. l., 1893.
 North Capitol to First street E., d. l., 1893, Repl.
 Twenty-second to Twenty-third st. W., d. l., 1893.
 Eleventh to Twelfth street E., d. l., 1893.
 Fourteenth st. to Florida ave. E., d. l., 1893.
 Twenty-fourth to Twenty-sixth st. W., d. l., 1894.
 Thirteenth to Fourteenth street E., d. l., 1894.
 Eighth to Ninth street W., d. l., 1893, Repl.
 North Capitol to First st. W., (basin), d. l., 1895.
 Third to Fourth street W., d. l., 1896.
 Twelfth to Thirteenth street E., d. l., 1896.
 Fourteenth to Fifteenth street W., d. l., 1896.
 Fifteenth st. to Vermont avenue W., d. l., 1896.
 Fifteenth to Madison street W., d. l., 1896.
 Connecticut avenue to Seventeenth street W.,
 d. l., 1896.
 Jackson place to Seventeenth st. W., d. l., 1896.
 North Capitol to First street W., d. l., 1896, Repl.
 Twelfth to Thirteenth street E., d. l., 1896.
 Fourteenth street W., crossing, d. l., 1896.
 Thirteenth to Fourteenth street E., d. l., 1896.
 Thirteenth to Fourteenth street W., d. l., 1896.
 Thirteenth street E., crossing, d. l., 1896.
 Eighth to Ninth street E., 1897.
 Eleventh to Twelfth street E., d. l., 1897.
 Twentieth to Twenty-first street W., d. l., 1897.
 Connecticut avenue to Seventeenth street W.,
 d. l., 1897.
 Fourth to Fifth street E., d. l., 1897.
 Fifteenth st. to Vermont ave. (basins), d. l., 1897.

H street S.

Water street W., crossing, No. 302 (B. P. W.).
 Third to Four-and-a-half street W., No. 376
 (B. P. W.).
 Sixth to Seventh street W., north side, No. 539
 (B. P. W.).
 Sixth to Seventh street W., No. 790 (B. P. W.).
 Four-and-a-half to Sixth street W., No. 835
 (B. P. W. & C.).
 South Capitol street to James Creek Canal,
 No. 853 (B. P. W. & C.).
 Four-and-a-half to Sixth street W., No. 631
 (Commsrs.).

Third street to Delaware avenue W., No. 730 (Commsrs.).
 Seventh to Ninth street W., No. 730 (Commsrs.).
 Delaware avenue to Third street W., No. 826 (Commsrs.).
 Third to Four-and-a-half street W., No. 1468 (Commsrs.).
 Third to Four-and-a-half street W., No. 1473 (Commsrs.).
 Third to Four-and-a-half street W., No. 1723 (Commsrs.).
 Four-and-a-half to Sixth street W., No. 2082 (Commsrs.).
 South Capitol to One-half street, d. l. 1888.
 Seventh to Eighth street W., d. l. 1889.
 Third to Four-and-a-half street W., d. l. 1890, Repl.
 Seventh to Eighth street W., d. l. 1890.

I street N.

Eighth to Ninth street W., February 23, 1853 (C. W.).
 Tenth street W., near, November 4, 1857 (C. W.).
 Fourteenth street to Connecticut avenue, July 27, 1865 (C. W.).
 Sixth to Seventh street W., September 1, 1865 (C. W.).
 Seventeenth to Eighteenth street, May 16, 1867 (C. W.).
 Sixth to Seventh street, October 3, 1867 (C. W.).
 Tenth to Twelfth st. W., April 25, 1868 (C. W.).
 Twelfth to Thirteenth st. W., May 9, 1868 (C. W.).
 Seventeenth to Eighteenth street W., June 1, 1868 (C. W.).
 Tenth to Twelfth street W., October 17, 1868 (C. W.).
 Twenty-second street to Rock Creek, September 13, 1869 (C. W.).
 Twentieth to Twenty-second street, October 6, 1869 (C. W.).
 Rock Creek, January 10, 1870 (C. W.).
 North Capitol to First st. E., No. 584 (B. P. W.).
 North Capitol to First st. W., No. 584 (B. P. W.).
 North Capitol to First st. E., No. 819 (B. P. W.).
 Fifteenth to Seventeenth street W., No. 275 (B. P. W.).
 Fourth to Fifth street W., No. 333 (B. P. W.).
 New Jersey avenue to North Capitol street, No. 384 (B. P. W. & C.).
 Seventh to Eighth street W., No. 602 (B. P. W.).
 Seventh to Eighth st. W., No. 692 X (B. P. W.).
 Fourth to Fifth street W., No. 896 (B. P. W.).
 Fourth street (basin), No. 896 (B. P. W.).
 Tenth to Eleventh st. E., No. 1034 (B. P. W. & C.).
 Fourth to Fifth street W. (basin), No. 1034 (B. P. W. & C.).
 North Capitol street, No. 1034 (B. P. W. & C.).
 Tenth to Eleventh street E., No. 5 (Commsrs.).
 Fourth to Sixth street E., No. 476 (Commsrs.).
 Thirteenth st. E., crossing, No. 449 (Commsrs.).
 Fourth to Fifth street W. (basins), No. 481 (Commsrs.).
 Sixth to Seventh street E., No. 589 (Commsrs.).
 North Capitol to First st. E., No. 591 (Commsrs.).
 Eighth to Ninth street E., No. 730 (Commsrs.).
 Twenty-first to Twenty-second street, No. 826 (Commsrs.).
 Fourth to Fifth street W. (basin), No. 1171 (Commsrs.).
 North Capitol to First street E. (basin), No. 1171 (Commsrs.).
 Eleventh to Twelfth st. E., No. 1270 (Commsrs.).
 Thirteenth street to Florida avenue E., No. 1270 (Commsrs.).
 Fourth to Fifth street W., No. 1566 (Commsrs.).
 Third to Fourth street E., No. 1716 (Commsrs.).
 Eighth to Ninth street E., No. 1723 (Commsrs.).
 North Capitol to First st. E., No. 1723 (Commsrs.).
 Third to Fourth street E., No. 1728 (Commsrs.).
 First st. to Delaware ave. W., August 30, 1877.
 Sixteenth to Seventeenth street W., d. l. 1886.
 Sixth to Seventh street E., d. l. 1887.
 Tenth to Eleventh street E., d. l. 1888.
 Sixth to Seventh street E., d. l. 1889.
 North Capitol to First st. E. (basin), d. l. 1890.
 North Capitol to First street E., d. l. 1890, Repl.
 Twelfth to Thirteenth street E., d. l. 1890.
 Sixth to Seventh street E., d. l. 1890.
 Sixth to Seventh street E., d. l. 1891.

Eighth to Ninth street E., d. l. 1895, Repl.
 North Capitol to First st. W., d. l. 1895, Repl.
 Seventh to Eighth street W., d. l. 1895, Repl.
 Thirteenth to Fourteenth street W. (basins), d. l. 1895.
 North Capitol to First st. W. (siphon), d. l. 1895.
 Eleventh to Twelfth street E., d. l. 1896.
 Twenty-first to Twenty-second st. W., d. l. 1893.
 First street E. (crossing), d. l. 1896.
 Fifth street to Massachusetts avenue, d. l. 1896.
 Virginia ave. to Twenty-seventh st., d. l. 1897.
 Third to Fourth street E., d. l. 1897.
 Twenty-fourth street, d. l. 1897.
 New Hampshire avenue (basin), d. l. 1897.

I street S.

Third to Four-and-a-half street W., No. 376 (B. P. W.).
 Sixth to Eighth street E., north side, No. 484 (B. P. W.).
 Sixth to Seventh street W., north side, No. 539 (B. P. W.).
 Third to Fourth street E., No. 833 (B. P. W.).
 Second to Third street E., No. 843 (B. P. W.).
 South Capitol street to James Creek Canal, No. 853 (B. P. W. & C.).
 Ninth to Twelfth street E., No. 587 (Commsrs.).
 Four-and-a-half to Sixth street W., No. 730 (Commsrs.).
 Four-and-a-half to Sixth street W., No. 826 (Commsrs.).
 Fourth to Fifth street E., No. 954 (Commsrs.).
 Second to Third street W., No. 1468 (Commsrs.).
 One-half to First street E., No. 1468 (Commsrs.).
 Eighth to Ninth street E., No. 1468 (Commsrs.).
 South Capitol to Half st. E., No. 1473 (Commsrs.).
 Third to Four-and-a-half street W., No. 2082 (Commsrs.).
 Delaware avenue to James Creek Canal, No. 2238 (Commsrs.).
 First to Third street W., No. 2361 (Commsrs.).
 First st., to Delaware ave., north side, d. l. 1876.
 First to Canal street W., north side, d. l. 1876.
 First street to Delaware avenue W., north side, d. l. 1878.
 Delaware avenue to Third street W., d. l. 1889.
 Second to Third street W., d. l. 1890.
 Third to Fourth street E., d. l. 1892.
 Second to Third street W., d. l. 1892.
 Second to Third street W., d. l. 1894.
 Sixth to Seventh street E., d. l. 1895, Repl.
 Second to Third street E., d. l. 1896.
 Tenth to Eleventh street E., d. l. 1896.
 Twelfth to Thirteenth street E., d. l. 1896.
 Third to Fourth street E., d. l. 1897.
 Four-and-a-half to Sixth st. W., d. l. 1897, Repl.
 Eighth to Ninth street E., d. l. 1897.
 Ninth to Tenth street E., d. l. 1897.
 Twelfth to Thirteenth street E., d. l. 1897.

K street N.

Eighth to Ninth st. W., October 29, 1864 (C. W.).
 Thirteenth to Fourteenth street W., July 27, 1865 (C. W.).
 Eleventh to Twelfth street W., November 15, 1870, April 4, 1871 (C. W.).
 Eighth to Ninth street, No. 192 (B. P. W.).
 Third to Fourth street W., No. 2304 (B. P. W.).
 Twenty-fourth street to Rock Creek, No. 274 (B. P. W.).
 Third to Fourth street W., No. 341 (B. P. W.).
 Fourteenth to Fifteenth street W., No. 350 (B. P. W.).
 Ninth to Twenty-third st. W., No. 350 (B. P. W.).
 Ninth to Tenth street W., No. 424 (B. P. W.).
 Sixth to Seventh st. E., No. 702 (B. P. W. & C.).
 North Capitol to Seventh street W., No. 735 (B. P. W.).
 North Capitol to First st. E., No. 710 (B. P. W.).
 Rock Creek to Thirty-second street, No. 860 (B. P. W.).
 Thirty-second to Thirty-third street, No. 765 (B. P. W.).
 Fifth to Sixth street W., No. 91 (Commsrs.).
 Seventh to Ninth street W., No. 177 (Commsrs.).
 Sixteenth st. W., crossing, No. 589 (Commsrs.).
 North Capitol to First st. E., No. 897 (Commsrs.).

First to Third street E., No. 954 (Commsrs.).
Fourth to Fifth street E., No. 954 (Commsrs.).
Delawareave. to Third st. E., No. 954 (Commsrs.).
First street E. (basin), No. 1171 (Commsrs.).
Washington Circle to Twenty-second street,
No. 1195 (Commsrs.).
Fifth to Seventh street E., No. 1195 (Commsrs.).
Twelfth street to Florida avenue E., No. 1270
(Commsrs.).
North Capitol to Fourth street W., No. 1287
(Commsrs.).
Second street to Delaware avenue E., No. 1468
(Commsrs.).
Twenty-fourth street W., two siphons, No. 1913
(Commsrs.).
Twentieth to Twenty-first street W., No. 2206
(Commsrs.).
Seventh to Eighth st. W., north side, d. l. 1879.
Seventh to Eighth st. W., north side, d. l. 1882.
Twenty-first to Twenty-second street, north
side, d. l. 1883.
Third to Fourth street E., d. l. 1886.
Eighth to Ninth street E., d. l. 1887.
Fourth to Fifth street E. (basin), d. l. 1888.
North Capitol to First st. E., d. l. 1888. Repl.
Thirty-third to Thirty-fourth st. W., d. l. 1888.
Fifteenth to Sixteenth st. W., d. l. 1889. Repl.
Twenty-seventh to Twenty-eighth street
(basin), d. l. 1889.
Fourteenth to Fifteenth street W. (basins) d. l.
1889.
Third to Fourth street E., d. l. 1889.
Fifteenth to Sixteenth st. W., d. l. 1890. Repl.
Fourteenth to Fifteenth street W., south side,
d. l. 1891.
Sixteenth to Seventeenth street W., d. l. 1891.
Repl.
Fifth to Sixth street E., d. l. 1891.
Twelfth street to Florida avenue E., d. l. 1893.
Third to Fourth street E., d. l. 1893.
Sixth to Seventh street E., d. l. 1894.
North Capitol to First st. E. (basin), d. l. 1894.
New Jersey avenue to First st. W., d. l. 1894.
Fourth to Fifth street W., d. l. 1894.
Second street to Delaware avenue, d. l. 1894.
Fourth to Fifth street W., d. l. 1895.
Seventh to Eighth street E., d. l. 1895.
Sixth to Seventh street E., d. l. 1895.
Twenty-first to Twenty-second street W., d. l.
1896.
Eighth to Ninth street E., d. l. 1896.
Eighteenth to Nineteenth street W., d. l. 1896.
Ninth to Tenth street E., d. l. 1896.
Third to Fourth street E., d. l. 1897.

K street S.

Third to Four-and-a-half street W., No. 376
(B. P. W.).
Sixth to Seventh street W. (both sides), No.
539 (B. P. W.).
Third street W., crossing, No. 954 (Commsrs.).
Tenth to Twelfth street E., No. 1169 (Commsrs.).
Half to Third st. W., No. 1171 (Commsrs.).
Tenth to Eleventh st. E., No. 1270 (Commsrs.).
Third to Four-and-a-half street W., No. 1897
(Commsrs.).
New Jersey avenue to First street E., siphon,
No. 1913 (Commsrs.).
Thirteenth to Fourteenth street E., No. 2008
(Commsrs.).
Eighth to Ninth street E., north side, d. l. 1881.
Sixth to Seventh street E., d. l. 1886.
Eighth to Ninth street E., d. l. 1886.
Ninth to Tenth street E., d. l. 1888.
South Capitol to Half street E., d. l. 1888.
Sixth to Seventh street E., d. l. 1891.
Delaware avenue to First street W., d. l. 1891.
Four-and-a-half to Sixth street W., d. l. 1892.
Third to Fourth street E., d. l. 1893.
Canal street W., d. l. 1895.
Four-and-a-half to Sixth street W., d. l. 1895.
Sixth to Seventh street E., d. l. 1895.
Georgia avenue to Thirteenth st. E., d. l. 1897.
Sixth to Seventh street E., d. l. 1897.
Fifth to Sixth street E., d. l. 1897.
Twelfth to Thirteenth street E., d. l. 1897.
Third street E., crossing, d. l. 1897.

L street N.

Ninth to Tenth street, May 23, 1863 (C. W.).
Twentieth to Twenty-first street, May 24, 1864
(C. W.), not constructed.
Sixteenth to Seventeenth street, June 4, 1864
(C. W.), not constructed.
Fourteenth street to Vermont avenue, August
11, 1866 (C. W.).
Seventh to Eighth street, June 12, 1867 (C. W.),
not approved by mayor.
Fourth to Fifth street, June 10, 1869 (C. W.).
Twenty-first street, October 6, 1869 (C. W.).
Sixth to Seventh st., October 27, 1869 (C. W.).
Twelfth to Fourteenth street, August 22, 1870
(C. W.).
Fourteenth to Twenty-first street W., No. 244
(B. P. W.).
Twentieth to Twenty-first street W., No. 405
(B. P. W.).
Fourteenth to Twenty-first street W., No. 523
(B. P. W.).
New Jersey avenue to Tenth street W., both
sides, No. 640 (B. P. W.).
Fifth to Seventh st. E., No. 702 (B. P. W. & C.).
Ninth to Tenth street W., No. 704 (B. P. W.).
Twenty-second to Twenty-fourth street, No.
729 (B. P. W.).
Twenty-second to Twenty-third street (basins),
No. 729 (B. P. W.).
Third street to New Jersey avenue, No. 709
(B. P. W. & C.).
North Capitol to First st. E., No. 836 (B. P. W.).
Twenty-sixth to Twenty-seventh street W.,
No. 890 (B. P. W. & C.).
Sixteenth to Twentieth street W., No. 69
(Commsrs.).
Sixth street E., crossing, No. 593 (Commsrs.).
First street to New Jersey avenue W., No. 631
(Commsrs.).
North Capitol to First st. W., No. 631 (Commsrs.).
Sixth st. to Florida ave. E., No. 1381 (Commsrs.).
Sixth street E. (basin), No. 1473 (Commsrs.).
Sixth to Seventh street E. (basins), No. 1473
(Commsrs.).
Third to Sixth street E., No. 1907 (Commsrs.).
Twenty-fourth street W., siphon, No. 1913
(Commsrs.).
North Capitol to First street E., No. 1918
(Commsrs.).
North Capitol to First street E., No. 1922
(Commsrs.).
First street to Delaware avenue E., No. 2008
(Commsrs.).
Fourteenth street to Vermont avenue, south
side, d. l. 1877.
Twenty-first to Twenty-second street, north
side, d. l. 1880.
North Capitol to First street W., north side,
d. l. 1880.
Twenty-first to Twenty-second street, south
side, d. l. 1884.
North Capitol to First street E., d. l. 1885.
First to Second street W., d. l. 1885.
Eighth to Ninth street W., d. l. 1886.
Twentieth to Twenty-first street W., d. l. 1886.
Twenty-first to Twenty-second st. W., d. l. 1887.
Eighth to Ninth street W., d. l. 1887.
First street to New Jersey avenue W., d. l. 1887.
First street to New Jersey avenue W., d. l. 1888.
North Capitol to First street W., d. l. 1888.
Twenty-first to Twenty-second st. W., d. l.
1889.
Twentieth to Twenty-first street W., d. l. 1889.
Twenty-first to Twenty-second st. W., d. l. 1890.
Fifth to Sixth street W., d. l. 1891.
Twentieth to Twenty-first street W., d. l. 1892.
Twenty-first to Twenty-second st. W., d. l. 1893.
Fifth street E., d. l. 1893.
Twenty-first street to New Hampshire avenue,
d. l. 1894.
Sixth to Seventh street E., d. l. 1894.
Ninth street to Florida avenue E., d. l. 1895.
Third to Fourth street E., d. l. 1895.
Seventh to Eighth street E., d. l. 1895.
North Capitol to First st. W., d. l. 1895. Repl.
Second to Third street E., d. l. 1895.
Twenty-first to Twenty-second st. W., d. l. 1896.
Second street to Delaware avenue E., d. l. 1896.

L street S.

Sixth to Seventh street E., No. 297½ (B. P. W.).
 Third to Four-and-a-half street W., No. 376 (B. P. W.).
 Second to Third street E., No. 954 (B. P. W.).
 New Jersey avenue to First street E., No. 1169 (Comms.).
 Second to Fourth st. E., No. 1169 (Comms.).
 Fourth to Fifth street E., No. 1171 (Comms.).
 Tenth to Eleventh st. E., No. 1270 (Comms.).
 Four-and-a-half to Seventh street W., No. 1270 (Comms.).
 Fourth to Sixth street E., No. 1287 (Comms.).
 First to Canal street W., d. l., 1876.
 Twelfth to Thirteenth street E., d. l., 1887.
 Eighth to Ninth street E., d. l., 1888.
 Sixth to Seventh street W., d. l., 1890.
 New Jersey avenue to Second street E., d. l., 1893.
 First street to Delaware avenue W., d. l., 1894.
 Eleventh to Twelfth street E., d. l., 1894.
 Sixth street E., crossing, d. l., 1894.
 Third to Fourth street E., d. l., 1894.
 Fifth to Sixth street E., d. l., 1895.
 Third street to Delaware avenue W., d. l., 1895.
 Fourth to Fifth street E., d. l., 1897.
 Eighth to Ninth street E., d. l., 1897.
 Canal to Seventh street E., d. l., 1897.
 Public space, N W. corner (basin), d. l., 1897.
 Sixth to Seventh street E., d. l., 1897.
 Navy-yard E. (basin), d. l., 1897.

M street N.

Sixth to Seventh st., February 6, 1869 (C. W.).
 Twelfth to Fourteenth street W., May 24, 1869 (C. W.).
 Rock Creek to Thirtieth street W., No. 26 (B. P. W.).
 New Hampshire avenue to Rock Creek, No. 212 (B. P. W.).
 Fourteenth to Fifteenth street W., both sides, No. 247 (B. P. W.).
 Nineteenth to Twentieth street W., No. 405 (B. P. W.).
 Fourteenth to Fifteenth street W., No. 423 (B. P. W.).
 Eighteenth to Twentieth street W., No. 585 (B. P. W.).
 New Hampshire avenue to Twenty-second street, No. 615 (B. P. W.).
 Twentieth to Twenty-first street W., No. 759 (B. P. W.).
 Fourteenth to Fifteenth street W., No. 827 (B. P. W.).
 Thirty-third to Thirty-sixth street W., No. 838 (B. P. W. & C.).
 Thirteenth to Fourteenth street W., No. 874 (B. P. W.).
 Rock Creek Bridge (basins), No. 24X (Comms.).
 Seventeenth to Eighteenth street W., No. 449 (Comms.).
 Fifteenth to Seventeenth street W., No. 589 (Comms.).
 Thirty-sixth st. W. (basins), No. 957 (Comms.).
 Thirty-fifth to Thirty-sixth street W., No. 1169 (Comms.).
 Thirty-fourth to Thirty-fifth street W., No. 1270 (Comms.).
 Thirty-third to Potomac street W., No. 1468 (Comms.).
 Thirty-sixth to Thirty-seventh street W., No. 1596 (Comms.).
 Twelfth street to Trinidad avenue E., No. 1716 (Comms.).
 Twelfth street to Trinidad avenue E., No. 1723 (Comms.).
 First to Second street E., No. 2008 (Comms.).
 Seventh to Eighth street W., August 30, 1877.
 Rhode Island ave. to Seventeenth st., d. l., 1879.
 Eighteenth to Nineteenth street, north side, d. l., 1883.
 Third to Fourth street W., d. l., 1886.
 New Hampshire avenue to Twenty-first street, d. l., 1886.
 North Capitol to First street E., d. l., 1887.
 New Hampshire avenue to Twenty-first street, d. l., 1887.
 North Capitol to First street W., d. l., 1888.

Eighteenth to Nineteenth street W., d. l., 1889.
 Rock Creek to Twenty-eighth st. W., d. l., 1891.
 Fifth to Sixth street W., d. l., 1891.
 Seventeenth to Eighteenth street W., d. l., 1891.
 Trinidad avenue to Twelfth street E., d. l., 1893.
 Sixteenth to Seventeenth street W., d. l., 1893.
 North Capitol to First street E., d. l., 1894, Repl.
 North Capitol to First street W., d. l., 1894.
 North Capitol to First street E., d. l., 1894.
 Twelfth street E. to Trinidad sewer, d. l., 1894.
 Fourth to Fifth street E., d. l., 1895.
 Eighteenth to Nineteenth street W. (basin), d. l., 1895.
 Trinidad avenue E. (basin), d. l., 1895.
 Thirty-fifth to Thirty-sixth street W., d. l., 1896.
 Third to Fourth street E., d. l., 1896.
 Twentieth street W., crossing, d. l., 1896, Repl.
 Twenty-seventh to Twenty-eighth street W., d. l., 1896, Repl.
 Fifth to Sixth street E., d. l., 1896.
 Thirty-fifth to Thirty-seventh st. W., d. l., 1896.
 Nineteenth to Twentieth street W., d. l., 1897.
 Thirty-fourth to Thirty-fifth st. W., d. l., 1897.
 Thirty-fifth to Thirty-sixth street W., d. l., 1897.
 Third street to Delaware avenue E., d. l., 1897.
 Delaware ave. E., NE. corner (basin), d. l., 1897.
 Fourth street E., NE. corner (basin), d. l., 1897.
 Fourth street E., NW. corner (basin), d. l., 1897.
 Fifth street E., NE. corner (basin), d. l., 1897.
 Sixth street E., NE. corner (basin), d. l., 1897.
 Thirty-fifth to Thirty-sixth st. (basin), d. l., 1897.
 Florida avenue E. (basin), d. l., 1897.
 Eighteenth street W. (basin), d. l., 1897.

M street S.

Sixth to Eighth street E., No. 297½ (B. P. W.).
 Third to Four-and-a-half street W., No. 376 (B. P. W.).
 Third street to James Creek Canal W., No. 394 (B. P. W.).
 Sixth to Seventh street W., north side, No. 539 (B. P. W.).
 One-half to First street W., No. 589 (Comms.).
 Third to Sixth street W., No. 589 (Comms.).
 South Capitol to One-half street W., No. 590 (Comms.).
 Second to Third street E., No. 826 (Comms.).
 Second to Fourth street E., No. 954 (Comms.).
 First street to New Jersey avenue E., No. 1169 (Comms.).
 Eleventh to Twelfth st. E., No. 1170 (Comms.).
 Ninth to Twelfth street E., No. 1195 (Comms.).
 Third street to Delaware avenue W., No. 1468 (Comms.).
 Delaware avenue W., No. 1473 (Comms.).
 Eighth to Ninth street E., No. 1923 (Comms.).
 Sixth to Water street W., No. 2058 (Comms.).
 Four-and-a-half to Union street W., south side, d. l., 1876.
 Four-and-a-half to Sixth street W., south side, d. l., 1876.
 Union to Sixth street W., d. l., 1881.
 Sixth to Seventh street E., d. l., 1893, Repl.
 Fourth to Fifth street E., d. l., 1893.
 Second st. to New Jersey avenue E., d. l., 1893.
 One-half to Canal street W., d. l., 1894.
 Fourth to Fifth street E., d. l., 1894.
 New Jersey avenue to First st. E., d. l., 1895.
 Fifth to Sixth street E., d. l., 1896.
 Third to Four-and-a-half st. W., d. l., 1896, Repl.
 Four-and-a-half to Seventh st. W., d. l., 1897, Repl.
 Fifth to Sixth street E., d. l., 1897.
 Second to Third street, d. l., 1897, Repl.

N street N.

Twelfth to Thirteenth street W., Dec. 9, 1870 (C. W.).
 Seventh to Fourteenth st. W., No. 64 (B. P. W.).
 Thirteenth street to Vermont avenue W., No. 195 (B. P. W.).
 Seventeenth to Eighteenth street W., No. 355 (B. P. W.).
 Seventh to Eighth street W., No. 592 (B. P. W.).
 New Jersey avenue to Fifth street W., No. 582 (B. P. W.).

Thirty-second to Thirty-fifth street W., No. 418 (B. P. W.).
 Fourteenth to Fifteenth street W., both sides, No. 628 (B. P. W.).
 Eleventh to Twelfth st., No. 628X (B. P. W.).
 Fourth to Tenth street W., both sides, No. 642 (B. P. W.).
 Fifteenth street to Rhode Island avenue, both sides, No. 669 (B. P. W.).
 Nineteenth street to Connecticut avenue W., No. 677 (B. P. W.).
 Thirtieth to Thirty-second street W., No. 701 (B. P. W.).
 Thirty-first to Thirty-second street W., No. 757 (B. P. W.).
 Fifth to Sixth street W., No. 760 (B. P. W. & C.).
 Seventh street W., crossing, No. 835 (B. P. W.).
 Thirty-second to Thirty-fifth street W., No. 856 (B. P. W.).
 Twenty-first to Twenty-third street W., No. 916 (B. P. W.).
 Fourteenth street to Vermont avenue W., No. 108 (Comms.).
 Eighth to Ninth street W., No. 476 (Comms.).
 Thirty-fifth st. W., basins, No. 728 (Comms.).
 Twenty-fifth street to Rock Creek, No. 854 (Comms.).
 North Capitol to Second street W., No. 1468 (Comms.).
 Twenty-seventh to Twenty-eighth street W., No. 1468 (Comms.).
 Twenty-fourth to Twenty-fifth street W., No. 1715 (Comms.).
 Twelfth street E. to B. and O. R. R., No. 1797 (Comms.).
 Fourteenth street W., two siphons, No. 1913 (Comms.).
 Eleventh to Twelfth street W., d. l., 1878.
 Seventeenth to Eighteenth street, south side, d. l., 1879.
 Nineteenth to Twentieth street, north side, d. l., 1880.
 Ninth to Tenth street W., d. l., 1880.
 Ninth to Tenth street W., south side, d. l., 1882.
 Nineteenth to Twentieth street, north side, d. l., 1882.
 New Hampshire avenue to Twenty-first street, d. l., 1884.
 Nineteenth to Twentieth street, south side, d. l., 1885.
 Twenty-second to Twenty-third st., d. l., 1884.
 Fourteenth st. to Vermont ave., d. l., 1884.
 First to Third street W., d. l., 1886.
 New Hampshire avenue to Twenty-first street, d. l., 1886.
 Twentieth street W., crossing, d. l., 1887.
 Ninth to Tenth street W., d. l., 1888.
 Thirty-fourth to Thirty-fifth street (basin), d. l., 1888.
 Ninth to Tenth street W., d. l., 1889.
 Thirtieth to Thirty-first street, d. l., 1890.
 North Capitol to First street E., d. l., 1891.
 North Capitol to First street W., d. l., 1891.
 New Jersey avenue to Fourth st. W., d. l., 1891.
 Thirty-sixth to Thirty-seventh street (basin), d. l., 1892.
 Fourteenth to Sixteenth st. W., d. l., 1892. Repl.
 Thirty-third to Thirty-fourth street, d. l., 1892.
 First to Third street W., d. l., 1892.
 Thirty-fifth to Thirty-sixth street, d. l., 1892.
 Seventh to Eighth street W., d. l., 1893.
 Third to Kirby street W., d. l., 1893.
 North Capitol to First street W., d. l., 1894.
 Thirty-sixth to Thirty-seventh st., d. l., 1894.
 Twenty-fifth street to Rock Creek, d. l., 1895.
 Twenty-fourth to Twenty-fifth st., d. l., 1895.
 Nineteenth street to Connecticut avenue, d. l., 1895. Repl.
 Twenty-second to Twenty-third st., d. l., 1895.
 Ninth to Tenth street W., d. l., 1896.
 Twenty-first to Twenty-second st., d. l., 1896.
 Twenty-second to Twenty-third street, d. l., 1897. Repl.
 Eighteenth street to Connecticut avenue (basins), d. l., 1897.
 Twenty-first to Twenty-second st., d. l., 1897.
 Ninth to Tenth street W., d. l., 1897.
 Thirty-fifth street W., crossing, d. l., 1897.
 Second to Third street W., siphon, d. l., 1897.

N street S.

First to Canal street W., No. 25 (Comms.).
 Four-and-a-half to Sixth street, both sides, No. 345 (B. P. W.).
 Second to Third st. E., No. 36X (Comms.).
 Second to Four-and-a-half st., No. 730 (Comms.).
 South Capitol to One-half street E., No. 954 (Comms.).
 One-half to First st. E., No. 956 (Comms.).
 New Jersey ave. to First st. E., No. 956 (Comms.).
 Four-and-a-half street to Potomac River, No. 1376 (Comms.).
 Second to Third st. W., No. 2206 (Comms.).
 Second to Canal street W., d. l., 1885.
 Second to Canal street E., d. l., 1887.
 Third to Fourth street E., d. l., 1893.
 South Capitol to First street E., d. l., 1894.
 Four-and-a-half to Sixth street W., d. l., 1894.
 Delaware avenue to Canal street W., d. l., 1895.
 Eleventh to Twelfth street E., d. l., 1896.
 Third to Four-and-a-half st. W., d. l., 1896. Repl.
 Ninth to Tenth street E., d. l., 1896.
 Four-and-a-half to Sixth st. W., d. l., 1897. Repl.
 Canal street W. (crossing), d. l., 1897.
 Third to Four-and-a-half street W., d. l., 1897.

O street N.

Thirty-second to Thirty-fifth street W., No. 418 (B. P. W.).
 Twenty-second to Twenty-third street W., No. 517 (B. P. W.).
 Thirty-second to Potomac street W., No. 637 (B. P. W.).
 Sixth to Eighth street W., both sides, No. 643 (B. P. W.).
 Fifteenth to Seventeenth street W., No. 759 (B. P. W.).
 First to Sixth street W., No. 786 (B. P. W.).
 North Capitol to First st. W., No. 831 (B. P. W.).
 Sixth to Seventh street W., No. 835X (B. P. W.).
 Twenty-ninth to Thirty-second street, No. 835 (B. P. W. & C.).
 Eighth to Thirteenth st. W., No. 868 (B. P. W.).
 Fourth to Fifth street W., No. 910 (B. P. W.).
 Thirtieth st. W. (crossing), No. 1034 (B. P. W.).
 First to Sixth street W., No. 5 (Comms.).
 Seventh to Eighth street W., No. 5 (Comms.).
 Third to Seventh street W., No. 476 (Comms.).
 Thirtieth to Thirty-first street W., No. 591 (Comms.).
 First street W. to Florida avenue E., No. 601 (Comms.).
 Fourth to Fifth street W. (basin), No. 1256 (Comms.).
 First street W. (basins), No. 1256 (Comms.).
 Twentieth to Twenty-first street W., No. 1468 (Comms.).
 Thirty-fifth to Thirty-sixth street W., No. 1566 (Comms.).
 Twenty-First to Twenty-second street, No. 1715 (Comms.).
 Twenty-first to Twenty-second street W., No. 1723 (Comms.).
 Twelfth street E. to B. and O. R. R., No. 1797 (Comms.).
 Eighth street W., 2 siphons, No. 1913 (Comms.).
 Twelfth to Thirteenth street W., south side, d. l., 1876.
 Eleventh to Twelfth street W., south side, d. l., 1877.
 Twenty-first to Twenty-second street, north side, d. l., 1878.
 Ninth to Tenth street W., south side, d. l., 1879.
 Thirty-fifth to Thirty-sixth street, north side, d. l., 1880.
 Thirty-fifth to Thirty-sixth street, north side, d. l., 1883.
 Seventh to Eighth st. W., south side, d. l., 1883.
 Twentieth to Twenty-first street W., d. l., 1882.
 Twentieth to Twenty-first street, north side, d. l., 1883.
 Fifteenth to Sixteenth street W., d. l., 1883.
 North Capitol to First street E., d. l., 1885.
 Eighth to Ninth street W., d. l., 1886.
 Twenty-ninth to Thirtieth street W., d. l., 1886.

Ninth to Tenth street W., d. l., 1887.
 Eleventh to Twelfth street W., d. l., 1887.
 Twentieth to Twenty-first street W., d. l., 1888.
 Eleventh to Twelfth street W., d. l., 1888.
 Fifteenth to Sixteenth st. W., d. l., 1889, Repl.
 Sixteenth to Seventeenth st. W., d. l., 1889, Repl.
 North street, d. l., 1889.
 Twelfth to Thirteenth street W., d. l., 1889.
 Twenty-second street to Rock Creek, d. l., 1889.
 New Hampshire ave. to Twentieth st., d. l., 1890.
 Fifteenth to Sixteenth st. W., d. l., 1891, Repl.
 Thirty-third to Thirty-fourth street, d. l., 1891.
 Sixteenth to Seventeenth street W., d. l., 1892, Repl.
 Sixteenth to Seventeenth street W., d. l., 1893.
 Seventh to Eighth street W., d. l., 1893.
 Thirty-fourth to Thirty-fifth street., d. l., 1894.
 Twenty-first to Twenty-second street, d. l., 1894, Repl.
 Thirty-third to Thirty-fourth street, d. l., 1894.
 North Capitol to First street E., d. l., 1894.
 Vermont ave. to Thirteenth st. W., d. l., 1894.
 Thirty-sixth to Thirty-seventh st. W., d. l., 1894.
 Thirty-third to Thirty-fourth street, d. l., 1895.
 Thirty-sixth to Thirty-seventh street, d. l., 1895.
 First to Third street W., d. l., 1896.
 Fifteenth to Sixteenth st. W., d. l., 1896, Repl.
 North Capitol to First street E., d. l., 1897.
 Twenty-second street to Rock Creek, d. l., 1897.
 Twenty-seventh to North street, d. l., 1897.
 Thirty-second to Thirty-third street (basin), d. l., 1897.

O street S.

One-half to First street E., No. 1270 (Commsr.).
 Four-and-a-half street to Potomac River, No. 365 (B. P. W.).
 South Capitol to One-half street E., d. l., 1894.
 Eleventh to Twelfth street E., d. l., 1894.
 First to Canal street W., d. l., 1894.
 Canal street to Delaware avenue W., d. l., 1895.
 Eleventh to Twelfth street E., d. l., 1896.
 Four-and-a-half to Sixth st. W., d. l., 1897, Repl.

P street N.

Thirty-second to Thirty-fifth street W., No. 418 (B. P. W.).
 Rock Creek Bridge, east end (basins), No. 517 (B. P. W.).
 Twenty-second street W. (basins), No. 517 (B. P. W.).
 Twenty-second street to Rock Creek Bridge, No. 517 (B. P. W.).
 Rock Creek Bridge, west of, No. 517 (B. P. W.).
 Rock Creek Bridge, west end of (basins), No. 517 (B. P. W.).
 Twenty-eighth to Thirtieth street, No. 533 (B. P. W.).
 Fifth street W., crossing, No. 558 (B. P. W.).
 Seventeenth to Nineteenth street W., No. 677 (B. P. W.).
 First street W., crossing, No. 754 (B. P. W.).
 Third to Fifth st. W., No. 760 (B. P. W. & C.).
 Sixth to Seventh street, No. 760 (B. P. W.).
 Sixth to Tenth street W., No. 835 (B. P. W.).
 Thirteenth to Seventeenth street W., No. 840 (B. P. W.).
 Ninth to Tenth street W., No. 1003 (B. P. W.).
 Eighteenth st. W., crossing, No. 1034 (B. P. W.).
 Fourteenth street to Kingman Court W., No. 1094 (B. P. W. & C.).
 Twenty-ninth to Thirtieth street W., No. 242 (Commsr.).
 Thirty-second to Thirty-fifth street W., No. 577 (Commsr.).
 North Capitol to First street W., No. 589 (Commsr.).
 Eighth to Ninth street, W., No. 826 (Commsr.).
 Columbia to Tenth st. W., No. 826 (Commsr.).
 Twenty-sixth to Mill st. W., No. 954 (Commsr.).
 Columbia to Ninth st. W., No. 954 (Commsr.).
 Fifteenth to Seventeenth street W., No. 972 (Commsr.).
 Thirteenth to Fourteenth street W., No. 1270 (Commsr.).
 Tenth to Eleventh st. W., No. 1566 (Commsr.).
 Fifteenth to Seventeenth street W., No. 1722 (Commsr.).
 Third street to New Jersey avenue W., No. 2206 (Commsr.).

Thirty-first to Valley st. W., No. 2394 (Commsr.).
 Sixth to Eighth street W., August 30, 1877.
 Third street W., crossing, d. l., 1877.
 Sixth to Eighth street W., d. l., 1877.
 Thirty-fifth to Thirty-sixth street W., d. l., 1878.
 North st. to Rock Creek, north side, d. l., 1879.
 Twenty-ninth to Thirtieth street, south side, d. l., 1879.
 Fifth to Sixth street W., d. l., 1880.
 Twentieth to Twenty-first street, north side, d. l., 1882.
 Twenty-eighth to Twenty-ninth street, south side, d. l., 1883.
 Ninth to Tenth street W., north side, d. l., 1883.
 Dupont Circle to Twentieth street, south side, d. l., 1880.
 Twenty-ninth to Thirtieth street, north side, d. l., 1880.
 Twentieth to Twenty-first street, north side, d. l., 1881.
 North Capitol to First street W., d. l., 1885.
 Rock Creek to North street (basin), d. l., 1886.
 Seventh to Eighth street W., d. l., 1886.
 Thirty-second to Thirty-third street, d. l., 1886.
 Thirty-fourth to Thirty-fifth street, d. l., 1887.
 Twenty-fourth to Twenty-sixth st. W., d. l., 1889.
 North Capitol to First street E., d. l., 1889.
 Fifth to Sixth street W., d. l., 1889.
 Rock Creek to Twenty-sixth street, d. l., 1889.
 Thirty-sixth to Thirty-seventh street, d. l., 1890.
 Twenty-first to Twenty-second street, d. l., 1890.
 Tenth to Eleventh street W., d. l., 1890.
 Eleventh to Twelfth street W., d. l., 1890.
 Twelfth to Thirteenth street W., d. l., 1891.
 Columbia to Eleventh street W., d. l., 1892, Repl.
 Fourth to Fifth street W., d. l., 1892, Repl.
 Twenty-sixth to Twenty-seventh st., d. l., 1892.
 Metropolitan R. R. Co.'s power house (basin), d. l., 1892.
 North Capitol to First street E., d. l., 1893.
 Mill street W. (basin), d. l., 1894.
 Mill to Twenty-eighth street W., d. l., 1894.
 First to Third street W., d. l., 1894.
 Fifteenth to Sixteenth st. W., d. l., 1895, Repl.
 New Jersey ave. to Fifth st. W., d. l., 1895, Repl.
 Eighteenth st. to Dupont Circle, d. l., 1895, Repl.
 Fourth to Fifth street W., d. l., 1895, Repl.
 Dupont Circle to New Hampshire avenue, d. l., 1895, Repl.
 Twenty-first to Twenty-second st., d. l., 1896.
 North Capitol to First street W., d. l., 1896.
 Thirty-fifth to Thirty-sixth street W., d. l., 1896.
 Thirty-sixth to Thirty-seventh street, d. l., 1896.
 Twenty-second street W., crossing, d. l., 1896.
 Rock Creek to Twenty-sixth st. W., d. l., 1896.
 North street to Rock Creek, d. l., 1897.
 North Capitol st. to Florida ave., d. l., 1897.
 Eighth to Ninth street W., d. l., 1897.
 Twenty-first to Twenty-second st., d. l., 1897.
 Eighth to Ninth street W., d. l., 1897, Repl.
 Seventh to Eighth street W. (siphon), d. l., 1897.
 Florida avenue, NE. corner (basin), d. l., 1897.

P street S.

Four-and-a-half street to Potomac River, No. 365 (B. P. W.).
 Water street, crossing, d. l., 1890.
 Second street W., crossing, d. l., 1892.

Q street N.

Seventeenth to Eighteenth street, bridge, June 10, 1869 (C. W.).
 Eighteenth to Twenty-first street W., No. 355 (B. P. W. & C.).
 Third street to New Jersey avenue W., No. 407 (B. P. W.).
 First street W., crossing, No. 754 (B. P. W.).
 Fifth street to New Jersey avenue W., No. 760 (B. P. W. & C.).
 Fifth to Eighth st. W., No. 770 (B. P. W. & C.).
 Fourteenth to Seventeenth street W., No. 798 (B. P. W.).
 Eighth to Ninth street W., No. 835 (B. P. W.).
 Sixth to Seventh street W., No. 845 (B. P. W.).
 Seventeenth to Nineteenth street W., No. 849 (B. P. W.).
 Twenty-first street to Florida avenue, No. 1039 (B. P. W.).

Tenth to Fourteenth street W., No. 1074 (B. P. W. & C.)
 Massachusetts avenue to Sixteenth street, No. 1094 (B. P. W. & C.)
 Twelfth street to Vermont avenue, No. 589 (Commsrs.)
 Thirtieth to Thirty-first street, No. 589 (Commsrs.)
 Thirteenth street to Vermont avenue, No. 590 (Commsrs.)
 Tenth to Twelfth street W., No. 591 (Commsrs.)
 Thirty-first to Thirty-second street W., No. 591 (Commsrs.)
 Seventeenth to Twenty-second street W., No. 590 (Commsrs.)
 Thirty-first street W., crossing, No. 631 (Commsrs.)
 First to Third street W., No. 826 (Commsrs.)
 Sixth to Seventh street W., No. 826 (Commsrs.)
 Marion street W., No. 826 (Commsrs.)
 Eighth to Ninth street W., No. 954 (Commsrs.)
 First street W. to Florida avenue, No. 1468 (Commsrs.)
 Thirty-third to Thirty-fourth street, No. 1270 (Commsrs.)
 First street E. to Lincoln avenue, No. 1898 (Commsrs.)
 Sixth to Seventh street W., No. 1900 (Commsrs.)
 Third street W., siphon, No. 1913 (Commsrs.)
 Third to Fourth street E., No. 2181 (Commsrs.)
 Kingman place to Fourteenth street, d. l., 1875.
 Third street W., crossing, d. l., 1877.
 Fifth to Sixth street W., north side, d. l., 1879.
 Thirtieth to Thirty-first street W., d. l., 1880.
 Thirteenth to Fourteenth street W., d. l., 1881.
 Fifth street to New Jersey avenue, north side, d. l., 1882.
 Fifth street to New Jersey avenue, north side, d. l., 1880.
 Twenty-eighth to Twenty-ninth street, center, d. l., 1882.
 Vermont avenue to Thirteenth street, south side, d. l., 1882.
 Twenty-second street to Massachusetts avenue, d. l., 1883.
 Twenty-eighth to Twenty-ninth street, center, d. l., 1883.
 Twenty-ninth to Thirtieth street, south side, d. l., 1883.
 Twentieth street to Connecticut avenue, south side, d. l., 1883.
 Fifth to Sixth street W., north side, d. l., 1885.
 Fifth st. to New Jersey ave., north side, d. l., 1880.
 Thirteenth to Fourteenth street, north side, d. l., 1881.
 Ninth to Columbia street W., d. l., 1885.
 Ninth to Columbia street W., d. l., 1886.
 Thirty-second to Thirty-third street, d. l., 1887.
 Tenth to Eleventh street W., d. l., 1887.
 Twenty-ninth to Thirtieth street W., d. l., 1887.
 Twenty-eighth to Twenty-ninth st., d. l., 1887.
 Eighth to Ninth street W., d. l., 1888.
 Thirty-second to Thirty-third street (basin), d. l., 1888.
 Valley street W. (basins), d. l., 1888.
 Ninth to Tenth street W., d. l., 1889.
 Seventeenth to Eighteenth street, d. l., 1889.
 Thirty-second to Thirty-third street, d. l., 1889.
 Thirty-third to Thirty-fourth street, d. l., 1889.
 Third to Fourth street W., d. l., 1890.
 Twentieth to Twenty-first street W., d. l., 1891.
 Twenty-second to Twenty-third st., d. l., 1891.
 Eleventh to Twelfth street, d. l., 1892.
 Fourteenth to Fifteenth street, d. l., 1892.
 Eighteenth to Nineteenth street, d. l., 1892.
 New Jersey ave. to Fifth st. (basin), d. l., 1893.
 Twenty-seventh to Twenty-eighth st., d. l., 1893.
 Thirtieth to Thirty-first street W. (basin), d. l., 1894.
 Thirty-second to Thirty-third street, d. l., 1894.
 Seventh to Eighth street W., d. l., 1894, Repl.
 Sixth street W., d. l., 1894, Repl.
 Twenty-seventh to Twenty-eighth st., d. l., 1894.
 Lincoln avenue to First street E., d. l., 1895.
 Thirtieth to Thirty-first street, d. l., 1895.
 New Hampshire to Connecticut avenue, d. l., 1895, Repl.
 Eleventh street to New Hampshire avenue (basin), d. l., 1895.
 Nineteenth st. to New Hampshire ave., d. l., 1896.

Lincoln avenue to First street E., d. l., 1896.
 Mill street, from, eastward, d. l., 1896.
 Thirty-fourth to Thirty-fifth street, d. l., 1896.
 Third to Fourth street E., d. l., 1897.
 Twenty-second to Twenty-third st. W., d. l., 1897.
 Florida avenue, NW. corner (basin), d. l., 1897.

R street N.

Seventh street to New Jersey avenue W., No. 388 (B. P. W. & C.)
 New Jersey avenue to Eighth street W., No. 407 (B. P. W.)
 Eighth to Fourteenth st. W., No. 547 (B. P. W.)
 Sixteenth st. to Slash Run, No. 624 (B. P. W.)
 Fifteenth to Sixteenth street, north side, No. 844 (B. P. W.)
 Nineteenth street to Connecticut avenue, No. 849 (B. P. W.)
 Fourteenth to Seventeenth street W., No. 867 (B. P. W.)
 Nineteenth to Twentieth street W., No. 911 (B. P. W.)
 Seventeenth to Eighteenth street W., No. 929 (B. P. W. & C.)
 Fourth street to New Jersey avenue, No. 1034 (B. P. W. & C.)
 Florida ave., crossing, No. 1050 (B. P. W. & C.)
 Fourteenth to Sixteenth street W., No. 1094 (B. P. W. & C.)
 Tenth to Twelfth street, No. 587 (Commsrs.)
 Third st. to Florida avenue, No. 631 (Commsrs.)
 Thirty-third st. W., crossing, No. 820 (Commsrs.)
 Third st. to Florida ave. W., No. 954 (Commsrs.)
 Fourth street W. (basins), No. 1256 (Commsrs.)
 Fifth street W. (basin), No. 1256 (Commsrs.)
 First st. E. to Lincoln ave., No. 1267 (Commsrs.)
 North Capitol to First street W., No. 1270 (Commsrs.)
 North Capitol street to Lincoln avenue, No. 1270 (Commsrs.)
 Thirty-third to Thirty-fourth street, No. 1270 (Commsrs.)
 Twenty-second to Twenty-third street, No. 1468 (Commsrs.)
 Eighteenth st. W., crossing, No. 1468 (Commsrs.)
 Thirty-second to Thirty-third street, No. 1468 (Commsrs.)
 Florida avenue to Twenty-second street, No. 1473 (Commsrs.)
 Tenth to Twelfth street W., No. 1798 (Commsrs.)
 Fourth street to New Jersey avenue, No. 1899 (Commsrs.)
 Fourteenth st. W., siphon, No. 1913 (Commsrs.)
 Tenth to Eleventh street W., replacing, September 17, 1877.
 Fifteenth to Sixteenth street, d. l., 1879.
 Fourth street to New Jersey avenue, north side, d. l., 1880.
 Connecticut avenue to Twenty-first street, north side, d. l., 1883.
 Eighteenth to Nineteenth street, d. l., 1887.
 Twenty-first street to Florida avenue, d. l., 1887.
 Seventeenth to Eighteenth street, d. l., 1888.
 Twenty-first street W., d. l., 1888.
 New Jersey avenue to Fifth st., d. l., 1889, Repl.
 Vermont ave. to Fourteenth st., d. l., 1889, Repl.
 Eighteenth to Nineteenth street, d. l., 1890.
 Sixth to Marion street, d. l., 1890.
 Fifth street to New Jersey avenue, d. l., 1890.
 Third to Fourth street W., north side, d. l., 1891.
 First street W. to Florida avenue, d. l., 1891.
 New Jersey ave. to Fifth st. W., d. l., 1891, Repl.
 First street W., crossing, d. l., 1891.
 Ninth to Tenth street W., d. l., 1892, Repl.
 Eleventh to Thirteenth st. W., d. l., 1892, Repl.
 Twenty-first st. to Florida ave., d. l., 1894.
 Thirty-fourth to Thirty-fifth st., d. l., 1895.
 Tenth to Eleventh street, d. l., 1896, Repl.
 Seventeenth to Eighteenth st., d. l., 1897, Repl.
 Florida ave. to Twenty-second st., d. l., 1897.
 Florida avenue, crossing, d. l., 1897.
 Twentieth st. to Connecticut ave., d. l., 1897.

S street N.

Fifteenth to Sixteenth st., No. 624 (B. P. W.)
 Fifteenth to Seventeenth st., No. 767 (B. P. W.)
 Seventeenth to Eighteenth street, No. 786 (B. P. W.)

Twelfth to Fourteenth st., No. 820 (B. P. W.).
 Sixth to Seventh st. W., No. 835 (B. P. W. & C.).
 Eighth to Ninth street, No. 857 (B. P. W.).
 Eighteenth to Twentieth street, No. 1050
 (B. P. W. & C.).
 Eleventh to Twelfth st., No. 1058 (B. P. W. & C.).
 Twelfth to Fourteenth st., No. 1058 (B. P. W.).
 Fifth to Seventh street, No. 1058 (B. P. W. & C.).
 Eleventh street to New Jersey avenue, No. 1058
 (B. P. W. & C.).
 Seventh to Eighth street W., No. 51 (Commsrs.).
 Tenth st. to Vermont ave., No. 589 (Commsrs.).
 Twelfth st. to Vermont ave., No. 590 (Commsrs.).
 Twentieth street to Connecticut avenue, No. 730
 (Commsrs.).
 Fifth to Sixth street W., No. 826 (Commsrs.).
 Tenth street W. (basin), No. 826 (Commsrs.).
 Seventeenth to Eighteenth street W., No. 832
 (Commsrs.).
 Thirty-third to Thirty-fourth street, No. 954
 (Commsrs.).
 Florida to Connecticut ave., No. 2394 (Commsrs.).
 Ninth to Tenth street, d. l., 1885.
 Ninth to Tenth street, d. l., 1889.
 Sixteenth to Seventeenth street, d. l., 1890.
 Eighteenth to Nineteenth street, d. l., 1890.
 Seventh to Eighth street, d. l., 1891.
 Eleventh to Twelfth street, d. l., 1892, Repl.
 Seventeenth street to New Hampshire avenue,
 d. l., 1892.
 Fifth street to New Jersey avenue, d. l., 1892.
 Seventeenth to Eighteenth street, d. l., 1893.
 Sixth to Seventh street, d. l., 1894.
 Seventh to Eighth street, d. l., 1894, Repl.
 Twelfth street W., crossing, d. l., 1894.
 New Hampshire avenue to Seventeenth street,
 d. l., 1894.
 Eighteenth to Nineteenth street, d. l., 1894.
 Florida avenue to Phelps place, d. l., 1895.
 Twentieth st. to Connecticut ave., d. l., 1895.
 Florida avenue to Phelps place, d. l., 1896.
 Sixth to Seventh street W., d. l., 1897, Repl.
 Sixth to Seventh street W., d. l., 1897.

T street N.

Fourteenth street to New Hampshire avenue
 No. 290 (B. P. W.).
 New Hampshire avenue to Eighteenth street,
 No. 766 (B. P. W.).
 Fourteenth to Nineteenth st., No. 766 (B. P. W.).
 Seventeenth to Nineteenth street, No. 766
 (B. P. W. & C.).
 Tenth to Thirteenth street, No. 803 (B. P. W.).
 Seventh to Eighth street, No. 835 (B. P. W. & C.).
 Eighth to Ninth street, No. 857 (B. P. W.).
 Tenth to Thirteenth street, No. 1008 (B. P. W.).
 Tenth to Thirteenth street, repairs, No. 1008
 (B. P. W. & C.).
 Thirteenth to Fourteenth st., No. 5 (Commsrs.).
 Eighth to Tenth street, No. 587 (Commsrs.).
 Thirteenth to Fifteenth st., No. 954 (Commsrs.).
 Thirteenth street to Vermont avenue, No. 972
 (Commsrs.).
 Twelfth to Thirteenth street W., No. 1183
 (Commsrs.).
 Sixth to Seventh street, replacing, No. 1195
 (Commsrs.).
 Juniper street (basin), No. 1256 (Commsrs.).
 Larch street (basin), No. 1256 (Commsrs.).
 Tenth to Twelfth st. W., No. 1267 (Commsrs.).
 Harewood ave. (basins), No. 1473 (Commsrs.).
 First street to LeDroit avenue W., No. 1566
 (Commsrs.).
 Fifteenth street to New Hampshire avenue,
 No. 1797 (Commsrs.).
 Fourth to Fifth street E., No. 2181 (Commsrs.).
 Seventeenth street to New Hampshire avenue,
 north side, d. l., 1877.
 Eleventh to Twelfth street W., d. l., No. 1878.
 Fourteenth to Fifteenth st., north side, d. l., 1878.
 Ninth to Tenth street W., d. l., 1878.
 Twelfth to Thirteenth street, d. l., 1887.
 Thirteenth to Fourteenth street, d. l., 1887.
 Fourteenth to Fifteenth street, d. l., 1889, Repl.
 Fourteenth to Fifteenth street, d. l., 1890, Repl.
 Florida avenue to Linden street, d. l., 1891.

Fifth to Sixth street W., d. l., 1891.
 Sixth street to Florida avenue W., d. l., 1891.
 Florida avenue to Juniper street, d. l., 1892.
 Thirty-third to Thirty-fourth street, d. l., 1894.
 Thirty-fourth to Thirty-fifth street, d. l., 1894.
 Harewood avenue to Linden st., d. l., 1894, Repl.
 Seventh to Eighth street, d. l., 1894.
 Eighth to Ninth street W., d. l., 1895, Repl.
 First to LeDroit avenue W. (basin), d. l., 1895.
 Seventh to Eighth street, d. l., 1896, Repl.

U street N.

Thirteenth to Fourteenth street, No. 1034
 (B. P. W. & C.).
 Eleventh to Twelfth st., No. 1050 (B. P. W. & C.).
 Sixteenth to Seventeenth street, pump house,
 No. 110 (Commsrs.).
 Ninth to Tenth street W., No. 296 (Commsrs.).
 Twelfth to Thirteenth st., No. 587 (Commsrs.).
 Tenth to Thirteenth street, No. 591 (Commsrs.).
 Fourteenth to Fifteenth street W., No. 630
 (Commsrs.).
 Thirty-second to Thirty-sixth street, No. 1270
 (Commsrs.).
 First st. to LeDroit ave., No. 1797 (Commsrs.).
 Sixteenth to Seventeenth street, north side,
 d. l., 1878.
 Ninth street to Vermont avenue, north side,
 d. l., 1879.
 Ninth to Tenth street, d. l., 1888.
 Thirty-first to Valley street, d. l., 1890.
 Thirtieth to Thirty-first street, d. l., 1891.
 Thirteenth to Fourteenth street, d. l., 1892.
 Thirty-first street to Avon place, d. l., 1893.
 Valley to High street, d. l., 1893.
 Thirteenth to Fourteenth street, d. l., 1893.
 Sixteenth to Seventeenth street, d. l., 1893.
 Avon place to Thirty-fifth street, d. l., 1894.
 Fourteenth to Fifteenth street, d. l., 1895.
 Fourteenth to Fifteenth street, d. l., 1895.
 Fifteenth to Sixteenth street, d. l., 1896.
 Sixteenth to Seventeenth st. (basins), d. l., 1897.
 Florida avenue, N.E. corner (basin), d. l., 1897.

V street N.

Seventeenth street to Florida avenue, No. 355
 (B. P. W. & C.).
 New Hampshire avenue to Seventeenth street,
 No. 849 (B. P. W. & C.).
 Thirteenth to Fourteenth street, No. 1034
 (B. P. W. & C.).
 Thirteenth to Fourteenth street, No. 1050
 (B. P. W. & C.).
 Eleventh to Twelfth st., No. 1050 (B. P. W. & C.).
 Tenth to Thirteenth street, No. 296 (Commsrs.).
 Fourteenth to Fifteenth st., No. 1170 (Commsrs.).
 Fourteenth to Fifteenth st., No. 1195 (Commsrs.).
 First st. W. to Flagler pl., No. 1749 (Commsrs.).
 Thirteenth to Fourteenth street, No. 1752
 (Commsrs.).
 Eleventh to Twelfth street, July 27, 1877.
 Eleventh to Twelfth st., south side, d. l., 1881.
 Thirteenth to Fourteenth street, north side,
 d. l., 1883.
 Vermont avenue to Tenth street, d. l., 1886.
 Florida avenue to Tenth street, d. l., 1887.
 Vermont avenue to Tenth street, d. l., 1889.
 Fourteenth to Fifteenth street, d. l., 1893.

W street N.

Eleventh to Twelfth st., No. 402 (B. P. W. & C.).
 Fourteenth to Fifteenth street, No. 849
 (B. P. W. & C.).
 Twelfth to Thirteenth st., No. 587 (Commsrs.).
 Eleventh to Twelfth street, No. 589 (Commsrs.).
 Twelfth to Thirteenth st., No. 590 (Commsrs.).
 Florida ave. to Twelfth st., No. 591 (Commsrs.).
 Thirteenth street, crossing west of, No. 1752
 (Commsrs.).
 Thirteenth to Fourteenth street, south side,
 d. l., 1883.
 Tenth to Eleventh street, d. l., 1887.
 Tenth to Eleventh street, d. l., 1891.
 Tenth to Eleventh street, d. l., 1893.
 First street W., d. l., 1894.

¹ Original sewer constructed under contract with B. P. W.

130 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

Acker street.

Sixth to Seventh street E., d. l., 1892.

Adams street, Anacostia.

Washington to Jackson st., No. 1386 (Commsrs.).
Jackson to Jefferson st., No. 1182 (Commsrs.).
Jackson street (basin), d. l., 1897.

Albany street.

Flagler place to Le Droit avenue, No. 2325 (Commsrs.).
Fourth to Fifth street E., No., 2217 (Commsrs.).

Avon place.

Cambridge to U street, No. 1716 (Commsrs.).
U to Irving street, d. l., 1893.
U to Irving street, d. l., 1894.

Bacon street.

Fourteenth to Fifteenth street, d. l., 1894.
Fourteenth to Fifteenth street, d. l., 1895.

Bancroft place.

Connecticut avenue to Phelps place, d. l., 1895.

Bank street.

M to Prospect street, center, d. l., 1876.
M to Prospect street, d. l., 1890.

Benning road.

Eastern Branch to abattoir works, d. l., 1891.
Sixteenth to Seventeenth street, d. l., 1894.
Fifteenth to Sixteenth street, d. l., 1895.
Fifteenth to Sixteenth st. (basins), d. l., 1895.
Sixteenth to Seventeenth street, d. l., 1896.

Binney street.

Fourteenth to Fifteenth street W., No. 1723 (Commsrs.).
Fourteenth to Fifteenth street W., d. l., 1893.
Fourteenth to Fifteenth street W., d. l., 1895.
Fourteenth to Fifteenth street W., d. l., 1897.

Bismark street.

Thirteenth street to Sherman avenue, No. 2205 (Commsrs.).

Bladensburg road.

H street, crossing, No. 1267 (Commsrs.).
Florida ave. to Levis st., No. 1267 (Commsrs.).
Florida ave. to Olivet road, No. 1473 (Commsrs.).
H to King street, d. l., 1887.
H to King street (basin), d. l., 1891.
1028 to 1042, rear of, d. l., 1894.
Bennings road (basin), d. l., 1895.
Florida ave., northward from (basin), d. l., 1896.
Alley in rear of road, d. l., 1897.

Blake street.

Fifteenth to Sixteenth street W., d. l., 1889.

Bohrer street.

Spruce street, at, d. l., 1896.

Brentwood road.

Florida avenue to Fourth street E., No. 836 (B. P. W. & C.).
Florida avenue to Fourth street E., No. 2181 (Commsrs.).

Brightwood avenue.

Florida to Grant avenue, No. 954 (Commsrs.).
Bismark street (basin), No. 1256 (Commsrs.).

Irving street (basin), No. 1256 (Commsrs.).
Irving to Bismark street, No. 1267 (Commsrs.).
Pomeroy street to Florida avenue (basin), No. 1473 (Commsrs.).

Rock Creek Church road to Whitney avenue, No. 2218 (Commsrs.).
Quincy to Savannah street, No. 2387 (Commsrs.).
Grant ave. to Harvard st., east side, d. l., 1879.
Grant to Florida avenue, d. l., 1889.
Pomeroy to Trumbull street, d. l., 1891.
Pomeroy st. to Florida ave., d. l., 1889, Repl.
Trumbull to College street, d. l., 1894.
Sheridan to Farragut street, d. l., 1894.
Florida to Grant avenue, d. l., 1895.
Florida avenue (basin), d. l., 1894.
Grant to Howard avenue, d. l., 1895.
Irving to Howard street, d. l., 1895.
Trumbull to Howard street, d. l., 1895.
Sheridan street to Whitney avenue, d. l., 1895.
Rock Creek Church road to Whitney avenue (basin), d. l., 1896.
Whitney to Sheridan avenue, d. l., 1896.
Mount Pleasant to Scott avenue, d. l., 1896.
Farragut to Sheridan street, d. l., 1896.
Whitney avenue, N.W. corner (basin), d. l., 1896.
Grant avenue, crossing, d. l., 1896.

Brown street.

Howard to Sheridan street, d. l., 1894.

Bunker Hill road.

Fourth to Seventh street, d. l., 1897.

Buchanan street, Anacostia.

Monroe street to Eastern Branch, d. l., 1887.

California avenue.

Connecticut avenue to Columbia road, No. 1195 (Commsrs.).
Connecticut avenue to Phelps place, No. 1723 (Commsrs.).
Columbia road to Le Roy place, d. l., 1889.
Eighteenth to Nineteenth street W., d. l., 1890.
Columbia road to Phelps place, d. l., 1892.

California street.

First to Second street, d. l., 1891.

Cambridge street.

Thirtieth street to Avon place, No. 1716 (Commsrs.).

Canal street.

Maryland avenue to South Capitol street, No. 1012 (B. P. W.).
M to N street, No. 24 (Commsrs.).
M to N street, No. 29 (Commsrs.).
B to First st. W. (basins), No. 976 (Commsrs.).
C street S. (basins), No. 1171 (Commsrs.).
D street S. (basins), No. 1171 (Commsrs.).
N st to Eastern Branch, No. 2360 (Commsrs.).
M to N street, east side, d. l., 1892.
South Capitol street (basin), d. l., 1889.
Delaware avenue to South Capitol street (basins), d. l., 1890.
M to N street S., d. l., 1895.
E st. S. (basin), NE, and SE, corners, d. l., 1896.
First and C streets, d. l., 1897.
L street, SE, corner (basin), d. l., 1897.

Caroline place.

Fifteenth to Sixteenth street, d. l., 1879.

Carroll street.

First to Second street E., No. 954 (Commsrs.).

Cecil alley.

Water to Grace street, d. l., 1877.
Water to Grace street, d. l., 1890.

Cedar street.

Eighteenth to Nineteenth street, d. l., 1893.

Center street.

Oak street to Fourteenth street extended, No. 1367 (Commsrs.).

Howard ave. to Fourteenth st., d. l., 1894.

Howard ave. to Fourteenth street, d. l., 1895.

Champlain avenue.

Florida ave. to Superior st. No. 1182 (Commsrs.).

Florida ave. to Superior st. No. 1236 (Commsrs.).

Superior street, north of, d. l., 1885.

Superior to Erie street, d. l., 1889.

Florida ave. to Columbia road (basin), d. l., 1890.

Superior to Erie street (basins), d. l., 1894.

Chapin street.

Fourteenth to Fifteenth street W., No. 954 (Commsrs.).

Fourteenth to Fifteenth street W., d. l., 1886.

Fourteenth to Fifteenth street W., d. l., 1889.

Cincinnati street.

Eighteenth st. to Rock Creek Bridge, d. l., 1896.

Clifton street.

Thirteenth to Fourteenth street, No. 832 (Commsrs.).

Thirteenth street, crossing, d. l., 1892.

Thirteenth to Fourteenth street, d. l., 1896.

Columbia avenue.

Erie to Huron street, No. 1716 (Commsrs.).

Erie to Huron street, d. l., 1893.

Erie to Morris street, d. l., 1894.

Columbia road.

Florida to Wyoming ave., No. 956 (Commsrs.).

Florida avenue to Woodley lane (basins), No. 957 (Commsrs.).

Eighteenth street to Champlain avenue, No. 1270 (Commsrs.).

Fourteenth to Fifteenth street, d. l., 1895.

Columbia street.

O to Q street, No. 871 (B. P. W.).

P to Q street, No. 826 (Commsrs.).

O to P street, d. l., 1886.

O to P street, d. l., 1890.

Thirteenth to Fourteenth st., No. 832 (Commsrs.).

Fourteenth to Fifteenth st., No. 1270 (Commsrs.).

Thirteenth to Fourteenth street, d. l., 1896.

Congress Heights.

Schoolhouse for, d. l., 1896.

Connecticut avenue.

K street to Slash Run sewer, September 1, 1870 (C. W.).

K to L street N., No. 459 (B. P. W.).

H to L street, No. 696 (B. P. W.).

Twentieth to R street, No. 849 (B. P. W.).

L to M street, west side, No. 990 (B. P. W.).

Q to R street, No. 1169 (Commsrs.).

California to Wyoming avenue, No. 1195 (Commsrs.).

R to S street, No. 1468 (Commsrs.).

L street, siphon, No. 1913 (Commsrs.).

Dupont circle, siphon, No. 1913 (Commsrs.).

M street, siphon, No. 1913 (Commsrs.).

Woodley road to Kalorama avenue, No. 2394 (Commsrs.).

N to P street, west side, d. l., 1878.

Eighteenth street to Rhode Island avenue, east side, d. l., 1880.

R to S street, west side, d. l., 1882.

N to P street, east side, d. l., 1883.

Massachusetts ave. to Q st., west side, d. l., 1883.

R to Q street, d. l., 1885.

R to S street, d. l., 1886.

Rhode Island avenue to N street, d. l., 1887.

Kalorama avenue to Woodley road, d. l., 1887.

R to S street, d. l., 1888.

Woodley lane, d. l., 1888.

K to L street, d. l., 1890.

N street to Massachusetts avenue, d. l., 1890.

H to I street, d. l., 1891.

Kalorama avenue to Woodley road, d. l., 1893.

Q to R street, d. l., 1894.

Bancroft place to Florida avenue, d. l., 1895.

Bancroft to Le Roy place, d. l., 1895.

N street to Dupont circle, d. l., 1895, Repl.

California avenue (basin), d. l., 1895.

Le Roy place (basin), d. l., 1895.

Bancroft place (basin), d. l., 1895.

Florida avenue (basin), d. l., 1895.

Rhode Island ave. to M st. (basin), d. l., 1895.

S street (siphon), d. l., 1896.

Florida avenue to Le Roy place, d. l., 1897.

Q to R street, d. l., 1897.

N street to Dupont circle (siphon), d. l., 1897.

Corcoran street.

Eighteenth to Nineteenth st., No. 355 (B. P. W.).

Thirteenth to Fourteenth st., No. 578 (B. P. W.).

Fourteenth to Sixteenth street W., N., 1004 (B. P. W. & C.).

Fifteenth to Sixteenth st., No. 5 (Commsrs.).

Fifteenth to Seventeenth street, No. 601 (Commsrs.).

Fourteenth to Fifteenth street, south side, d. l., 1878.

Seventeenth street to New Hampshire avenue, d. l., 1887.

Thirteenth to Fourteenth st. (basin), d. l., 1888.

Eighteenth to Nineteenth street, d. l., 1891.

Seventeenth street to New Hampshire avenue, d. l., 1892.

Eighteenth to Nineteenth st., d. l., 1893, Repl.

Fourteenth to Fifteenth street, d. l., 1893.

Eighteenth to Nineteenth street, d. l., 1894.

Decatur street.

North Capitol to First street (basin), d. l., 1893.

Delaware avenue.

B to C street N., No. 514 (B. P. W.).

C street to Massachusetts avenue N., No. 1047 (B. P. W. & C.).

F to H street N., No. 50 (Commsrs.).

Chicago to G street N., No. 51 (Commsrs.).

H to K street N., No. 51 (Commsrs.).

F to G street S., No. 503 (Commsrs.).

G to K street S., No. 730 (Commsrs.).

D to E street S., No. 954 (Commsrs.).

D to E street N., No. 954 (Commsrs.).

I street S. (basin), No. 957 (Commsrs.).

G to H street N. (basin), No. 1171 (Commsrs.).

C street S. (basins), No. 1171 (Commsrs.).

Canal street S. (basin), No. 1171 (Commsrs.).

H street S. (basins), No. 1256 (Commsrs.).

I to K street S., No. 1270 (Commsrs.).

K street N., crossing, No. 1468 (Commsrs.).

M street S., crossing, No. 1473 (Commsrs.).

E to F street N., No. 1797 (Commsrs.).

B to C street N., d. l., 1877.

C street S., crossing, d. l., 1885.

C street to Canal S., d. l., 1885.

G street S. (basin), d. l., 1889.

Canal street S., d. l., 1890.

Canal street S. (basins), d. l., 1890.

B to C street N., d. l., 1891.

M street S. (basin), d. l., 1892.

F to G street S., d. l., 1893.

M to N street S., d. l., 1894.

K to L street S., d. l., 1894.

L to M street S., d. l., 1895.

C to D street N., d. l., 1896.

B to C street N., d. l., 1896.

Second and M streets N., crossing, d. l., 1896.

H to I street S., d. l., 1897.

N to O street S., d. l., 1897.

Desales street.

Connecticut avenue to Seventeenth street, No. 760 (B. P. W. & C.).

Dover street.

Ninth to Tenth street E., No. 227 (Commsrs.).
Tenth to Twelfth street, d. l. 1897.

Dumbarton street.

Twenty-seventh to Twenty-ninth street, No. 265 (B. P. W.).
Thirty-first to Thirty-second street, No. 917 (B. P. W.).
Twenty-ninth to Thirty-first street, No. 826 (Commsrs.).
Thirtieth to Thirty-first street, d. l. 1884.
Twenty-eighth to Twenty-ninth street, d. l. 1893, Repl.
Twenty-seventh to Twenty-eighth st., d. l. 1893.

Duncan street.

Lansing to Hartford, d. l. 1897.

Dupont circle.

New Hampshire avenue to P street, d. l. 1880
Connecticut to Massachusetts avenue, d. l. 1880.
New Hampshire avenue to P street, d. l. 1890.
New Hampshire ave. to P st., d. l. 1890, Repl.
East line (basin), d. l. 1895.
Connecticut avenue and Nineteenth street, intersection, d. l. 1895, basin.

East Capitol street.

First street to Lincoln square, No. 76 (B. P. W.).
First to Second street, No. 869 (B. P. W.).
Ninth to Tenth street, No. 587 (Commsrs.).
Eighth to Ninth street, No. 589 (Commsrs.).
Fourth to Fifth street, No. 589 (Commsrs.).
Seventh to Eighth street, No. 591 (Commsrs.).
First to Second street, No. 631 (Commsrs.).
Sixth to Seventh street, No. 730 (Commsrs.).
Second to Fourth street, No. 826 (Commsrs.).
Third to Fourth street, replacing, No. 826 (Commsrs.).
Sixth to Eighth street, replacing, No. 826 (Commsrs.).
Fifth to Sixth street, No. 954 (Commsrs.).
Ninth to Tenth street, No. 954 (Commsrs.).
Eleventh to Twelfth street, No. 1716 (Commsrs.).
Tenth to Eleventh street, north side, d. l. 1890, Repl.¹
Tenth to Eleventh street, d. l. 1891, Repl.
Second to Third street, d. l. 1891, Repl.
Kentucky to Massachusetts avenue, d. l. 1895.
Tenth to Eleventh street E., d. l. 1895, Repl.
Eighth to Ninth street E., d. l. 1895, Repl.
Thirteenth to Fourteenth street, d. l. 1897.

Eckington place.

Florida avenue, north of, d. l. 1892.

Edgewood.

Fourth to Cincinnati st., No. 1407 (Commsrs.)

Elliot street.

F street to Maryland avenue N., d. l. 1890.

Elm street.

Harewood avenue to Linden street, No. 1728 (Commsrs.).
Harewood avenue to Linden street, d. l. 1891.
Linden to Larch street, d. l. 1893.

Eric street.

Columbia avenue to Sixteenth street, No. 1716 (Commsrs.).
Columbia avenue to W street (basin), d. l. 1893.

Eslin avenue.

Spring road to Lamar place, d. l. 1894.
Spring road to Lydecker avenue, d. l. 1895.

Euclid avenue.

University place (basin), No. 1473 (Commsrs.).
Fifteenth to Sixteenth st., No. 1716 (Commsrs.).
Fourteenth to Fifteenth street, d. l. 1888.
Fourteenth st. to University place, d. l. 1889.

Executive grounds.

B street to Fifteenth and E streets, No. 177 (Commsrs.).

Fenton street.

North Capitol to First st., No. 954 (Commsrs.).
North Capitol to First street, d. l. 1884.
North Capitol to First street, d. l. 1894.

Fillmore street, Anacostia.

Good Hope road to Jefferson street, No. 886 (B. P. W. and C.).
Harrison street to Eastern Branch, No. 1795 (Commsrs.).
Jackson street to Eastern Branch, No. 1806 (Commsrs.).
Washington to Jefferson street, d. l. 1894.
Washington to Jefferson street, d. l. 1895.
Pleasant to Jefferson street, d. l. 1895.

Flagler place.

V st. to outlet of reservoir, No. 2325 (Commsrs.).

Florence street.

F to G street, d. l. 1892.

Florida avenue.

Champlain avenue (basin and gravel pit), No. 355 (B. P. W. and C.).
Champlain avenue to Eighteenth street W., No. 355 (B. P. W. and C.).
Eleventh to Fifteenth st. W., No. 774 (B. P. W.).
Second to Eleventh street E., No. 836 (B. P. W.).
Second street to Brentwood road E., No. 836 (B. P. W. and C.).
Ninth to Sixteenth st. W., No. 805 (B. P. W.).
Seventh to Eighth street W., No. 1034 (B. P. W. and C.).
Eighth to Sixteenth st. W., No. 1050 (B. P. W.).
Eighteenth to Twentieth street W., No. 1050 (B. P. W. and C.).
Sixteenth street to Massachusetts avenue W., No. 1050 (B. P. W. and C.).
Eleventh street E. (gravel pit and basin), No. 3 (Commsrs.).
Fourteenth st. W. (basin), No. 73 (Commsrs.).
Bennings road, No. 95 (Commsrs.).
Fourteenth street to Eastern Branch E., No. 188 (Commsrs.).
Fourteenth street to Eastern Branch E., No. 188 X (Commsrs.).
Eighth to Fourteenth st. E., No. 245 (Commsrs.).
Eighth to Ninth street E., No. 296 (Commsrs.).
Eighth to Twelfth street E., No. 324 (Commsrs.).
Sixth to Eighth street E., No. 389 (Commsrs.).
Fourteenth street to Rock Creek W., No. 514 (Commsrs.).
Fourteenth to Fifteenth street W., No. 584 (Commsrs.).
Seventh street E. to Eighth street W., No. 591 (Commsrs.).
U to W street N., No. 591 (Commsrs.).
Eighteenth to Nineteenth street W., No. 957 (Commsrs.).
Trinidad ave. E. (basins), No. 957 (Commsrs.).
Third to R street, No. 1195 (Commsrs.).
R street N. (basin), No. 1256 (Commsrs.).
Seaton street (basin), No. 1256 (Commsrs.).
Larch street (basin), No. 1256 (Commsrs.).

¹ Original sewer constructed under contract with B. P. W.

North Capitol st. (basin), No. 1256 (Commsr.).
Fourth street E. (basin), No. 1256 (Commsr.).
Sixth street E. (basin), No. 1256 (Commsr.).
W st. to Grant avenue W., No. 1270 (Commsr.).
North Capitol st. (basin), No. 1473 (Commsr.).
Fifth street E. (basin), No. 1473 (Commsr.).
P street N. (basin), No. 1473 (Commsr.).
Thirteenth st. E. (basins), No. 1473 (Commsr.).
Trinidad avenue to I street N. (basin), No. 1473 (Commsr.).

Maple avenue (repairs), September 22, 1877.
Seventh to Eighth street W., d. l. 1879.
Fourth st. to Rhode Island ave. W., d. l. 1880.
Thirteenth to Fourteenth street W., south side, d. l. 1884.

Sixth to Seventh street W., d. l. 1887.
Fourth st. to New Jersey ave. W., d. l. 1887.
North Capitol to First street E., d. l. 1889.
First street to New York avenue W., d. l. 1889.
Fourth to Linden street W., d. l. 1889.
First st. E. to New York ave. (basins), d. l. 1890.
Seventh to Bohrer street W., d. l. 1890.
Sixth to Larch street W., d. l. 1890.
Larch to Linden street W., d. l. 1890.

Massachusetts avenue to R street N., d. l. 1891.
North Capitol to First street E., d. l. 1891.
Linden to Larch street W., d. l. 1891.
Bohrer to Juniper street W., d. l. 1891.
Fourth to Fifth street W., d. l. 1891.
Third to Fourth street W., d. l. 1892.
Sixth to Seventh street W., d. l. 1892.
Linden to Larch street W., d. l. 1892.

Thirteenth to Fourteenth street W., d. l. 1892.
Brentwood road, d. l. 1893.
Fourth street E. (basin), d. l. 1893.
Larch to Juniper street W., d. l. 1893.
Sixth to Seventh street W., d. l. 1893.
First to Third street W., d. l. 1893.
Fourth to Fifth street W., d. l. 1893.
Third street W. to R street N., d. l. 1894.
Thirteenth to Fourteenth street E., d. l. 1894.
First to Quincy street W., d. l. 1894.
North Capitol to Q street W., d. l. 1895.
North Capitol to Porter street E., d. l. 1895.
Brentwood road (basin), d. l. 1895.
Quincy to North Capitol street, d. l. 1896.
Q to North Capitol street, d. l. 1896.
New York avenue to Brentwood road E. (basins), d. l. 1896.

Eighteenth to Nineteenth street W., d. l. 1896.
North Capitol to R street, d. l. 1896.
Twelfth to Thirteenth street E., d. l. 1896.
Eighth to Ninth street E., d. l. 1896.
Q to R street N. (basin), d. l. 1896.
Thirteenth to K street E., d. l. 1897.
Seventh to Eighth street W., d. l. 1897, Repl.
Seventh to M street E., d. l. 1897.
First to Q street W., d. l. 1897.
P to Q street N., d. l. 1897.
Seventh to Eighth street E., d. l. 1897.
Twentieth st. to Connecticut avenue d. l. 1897.
Eighth to Ninth street E., d. l. 1897.
North Capitol to Quincy street, d. l. 1897.
Quincy to First street W., d. l. 1897.
Twelfth to Thirteenth street E., d. l. 1897.
North Capitol to Q street, d. l. 1897.

Frankfort street.

Tenth to Twelfth street, d. l. 1897.
Ninth to Tenth street, d. l. 1897.

Franklin street.

Fifth street to New Jersey avenue, No. 760 (B. P. W. & C.); d. l. 1885; d. l. 1890; d. l. 1894.

French street.

Ninth to Tenth street W., d. l. 1894.

Gales Creek.

Florida avenue, north of, No. 836 (B. P. W. & C.).

Gales street.

Fifteenth to Sixteenth st. E., No. 898 (Commsr.).
Sixteenth to Seventeenth street E., d. l. 1897.

Georgia avenue.

Fourteenth to Sixteenth st., No. 2210 (Commsr.).
Sixteenth to Seventeenth street, No. 2232 (Commsr.).

Third to Fourth street, d. l. 1885.
Ninth to Tenth street, d. l. 1888.
Ninth to Tenth street E., d. l. 1890.
Tenth to Eleventh street E., d. l. 1894.
Canal to Third street, d. l. 1894.
Tenth to Eleventh street, d. l. 1896.
Eighth to Ninth street, d. l. 1897.
Thirteenth to Fourteenth street, d. l. 1897.
Twelfth to Thirteenth street, d. l. 1897.

Girls' Reform School.

Conduit road and through school grounds, No. 1912 (Commsr.).

Grace street.

Thirty-second to Potomac street, d. l. 1890.

Grant avenue.

Seventh to Eighth street, No. 5 (Commsr.).
Florida ave. to Eighth st., No. 1366 (Commsr.).
Florida ave. to Ninth st., No. 1723 (Commsr.).
Seventh street (basin), d. l. 1890.
Eighth street (basin), d. l. 1890.

Grant place.

Ninth to Tenth street W., d. l. 1889.
Sixteenth to School street, d. l. 1897.

Hanover place.

North Capitol to First street, d. l. 1892.
North Capitol to First street, d. l. 1895.

Harrison street, Anacostia.

Monroe street to Eastern Branch, No. 175 (Commsr.).
Nichols ave. to Fillmore st. (basin), d. l. 1895.
Nichols avenue to Fillmore street, d. l. 1896.
Minnesota to Fillmore street, d. l. 1897.

Hartford street.

Twelfth to Thirteenth street, d. l. 1897.
Ninth to Twelfth street, d. l. 1897.
Ninth to Tenth street, d. l. 1897.
Tenth to Twelfth street, d. l. 1897.

Harvard street.

Thirteenth street to New Jersey avenue, No. 838 (Commsr.).
Thirteenth to Fourteenth street, d. l. 1896.

Heckman place.

First to Second street E., d. l. 1892.

Holmead avenue.

Spring road to Whitney avenue, No. 2057 (Commsr.).
Spring road (basin), d. l. 1897.
Piney Branch road (basins), d. l. 1897.

Hopkins street.

O to P street, d. l. 1891.
O to P street, d. l. 1893.

Howard avenue.

Center to Seventeenth st., No. 1270 (Commsr.).
Sixth to Seventh street, d. l. 1892.
Center to Fourteenth street, d. l. 1894.
Center to Brown street, d. l. 1894.
Center to Brown street, d. l. 1895.
Fourteenth to Center street, d. l. 1895.
Eighteenth to Nineteenth street, d. l. 1897.

Huntington place.

University place to Fourteenth st., d. l., 1896.
University place to Fourteenth st., d. l., 1897.

Illinois avenue.

Brandywine to Flint st., No. 2300 (Comms.).

Indiana avenue.

Sewer in Indiana avenue from First to Third street, across square No. 532, in Judiciary square, G and Sixth street; Third and D street NW, July 26, 1892, C. W., July 2, 1897, D street at Third street, August 21, 1899, May 9, and August 5, 1894.
Second st. from C to D st., November 8, 1847.
Fourth street from E to G street, April 5, 1849.
Third and D street, April 12, 1850.
Square No. 532, October 3, 1851, March 19, 1852, August 16, 1853.
G street NW., from Fifth to Sixth street, August 16, 1853.
Sixth street NW., from G street to Massachusetts avenue, August 16, 1853.
Square No. 532, May 16, 1857.
G street NW., from Fifth to Sixth street, September 9, 1857.
Sixth st. from G to I st., September 9, 1857.
Sixth st. from I to L st., January 13, 1865.
Judiciary square, act of Congress, March 15, 1856.
Indiana avenue, construct culvert in, act of Congress August 12, 1848, and August 18, 1856.
First street (basins), No. 728 (Comms.).
Second street (basins), No. 728 (Comms.).
C street (basin), No. 728 (Comms.).
Second to Third street, No. 954 (Comms.).
First to Second street, north side, d. l., 1878.
First to Second street, north side, d. l., 1879.

Iowa circle.

Rhode Island to Vermont avenue, d. l., 1876.

Irving street.

Seventh to Eighth street, No. 1267 (Comms.).
Thirtieth st. to Avon place, No. 1723 (Comms.).
Sherman avenue to Thirtieth st., d. l., 1897.

Ivy street.

South Capitol street to New Jersey avenue, d. l., 1894. See Square No. 693.

Jackson street, Anacostia.

Fillmore to Madison street, No. 1386 (Comms.).
Fillmore to Monroe street, d. l., 1894.
Adams to Fendall street (basin), d. l., 1897.
Taylor to Fendall street (basin), d. l., 1897.

Jefferson street, Anacostia.

Adams to Taylor street, No. 1182 (Comms.).
Polk to Pierce street, No. 1797 (Comms.).
Monroe to Fillmore st., No. 1797 (Comms.).
Fillmore to Pierce street, d. l., 1886.
Adams to Taylor street, d. l., 1897.
Taylor street, intersection of, d. l., 1897.
Taylor street, south of, d. l., 1897.

Jefferson place.

Eighteenth to Nineteenth street, d. l., 1879.
Eighteenth to Nineteenth street, d. l., 1880.

Jefferson street.

K street to canal, No. 860 (B. P. W.).
K to M street, No. 860 (B. P. W.).
Water street to Chesapeake and Ohio Canal, d. l., 1894.
M to Water street, d. l., 1895.

Johnson place.

R to S street, d. l., 1889.
R to S street, d. l., 1893.
R to S street, d. l., 1896.

Kalamazoo avenue.

Woodley road, crossing, d. l., 1881.
Columbia road to Eighteenth street, d. l., 1895.

Kenesaw avenue.

Fourteenth to Fifteenth st., No. 954 (Comms.).
Sixteenth to Seventeenth street, siphon, No. 1913 (Comms.).
Sixteenth street to Rock Creek, No. 2214 (Comms.).
Fourteenth to Sixteenth street, d. l., 1890.
Thirteenth st. to Sherman avenue, d. l., 1895.
Thirteenth to Fourteenth street, d. l., 1895.
Thirteenth street to Sherman ave., d. l., 1896.
Fifteenth to Sixteenth street W., d. l., 1896.
Rock Creek to Sixteenth street, d. l., 1897.

Kentucky avenue.

B street to South Carolina avenue, d. l., 1893.
E to Fourteenth street, 1894, D. C. inspection.
B street to East Capitol street, d. l., 1894.
Pennsylvania to Georgia avenue, d. l., 1894.
East Capitol to B street, d. l., 1895.
Pennsylvania to Georgia avenue, d. l., 1895.
East Capitol to B street, d. l., 1896.
Thirteenth street E. (basin), d. l., 1896.
C street, NW, and SW, corners, d. l., 1896.
Thirteenth street, crossing, d. l., 1896.

Kenyon street.

Thirteenth to Fourteenth street, d. l., 1895.
Thirteenth to Fourteenth street, d. l., 1896.
Thirteenth st. to Sherman avenue, d. l., 1896.

Keokuk street.

Eighth to Ninth street, No. 2217 (Comms.).

Kingman place.

P to Q street, No. 1270 (Comms.).
P to Q street, d. l., 1877.
P to Q street, d. l., 1895, Repl.
P to Q street, siphon, d. l., 1896.

Kirby street.

New York ave. to O st., No. 136 (Comms.).
New York ave. to N st., No. 1723 (Comms.).

Lamar street.

Eslin to Morgan street, d. l., 1897.

Lansing street.

Queen to Duncan street, d. l., 1897.

Larch street.

Florida avenue to T street, d. l., 1891.

Laurel avenue.

Piney Branch road, from, westwardly, No. 1267 (Comms.).
Piney Branch road at, d. l., 1893.

Lawrence street.

Eighteenth to Nineteenth street, d. l., 1883.
Eighteenth to Nineteenth st. (basins), d. l., 1891.

Le Droit avenue.

(See Second street W.)

Le Roy place.

Columbia road to Phelps place, d. 1., 1891.
Columbia road to Phelps place, d. 1., 1896.
Columbia road to Phelps place, d. 1., 1897.
Phelps place, NE. corner (basin), d. 1., 1897.

Levis street.

Bladensburg road to Trinidad ave., d. 1., 1893.

Lincoln avenue.

Florida avenue to R street, No. 1385 (Commsrs.).
Randolph to R street, No. 1715 (Commsrs.).
North Capitol street (basin), d. 1., 1891.
Truxton circle to R street, d. 1., 1891.

Linden street.

(See Fourth street W.)

Louisiana avenue.

Sixth to Seventh street, May 3, 1866 (C. W.).
Ninth to Tenth st. (basin), No. 823 (Commsrs.).
Sixth to Seventh street, No. 1270 (Commsrs.).
Sixth to Seventh street, d. 1., 1892.

Lydecker avenue.

Holmead avenue to Thirteenth street, d. 1., 1896.
Eslin street to Sherman avenue, d. 1., 1896.

Madison street.

M to N street E. (square No. 448), d. 1., 1890.
Fifteenth to Sixteenth street W. (square No. 180), d. 1., 1891. Repl.
Seventeenth to Eighteenth street (square No. 150), d. 1., 1893.
Thirty-fifth to Thirty-sixth street, d. 1., 1897.

Maine avenue.

Four-and-a-half street to Tiber sewer, No. 580 (B. P. W.).
Third to Four-and-a-half st., No. 1806 (Commsrs.).

The Mall.

Third to Sixth street, W., No. 565 (B. P. W.).
Smithsonian Grounds, in, No. 316 (Commsrs.).

Maple street.

(See T street N.).

Marion street.

P to Q street N., No. 589 (Commsrs.).
P to Q street, d. 1., 1881.
Q to R street, d. 1., 1890.

Market space.

Eighth to Ninth st. W., November 1, 1896 (C. W.).
Canal to M street W., d. 1., 1890.

Marshall street.

Sherman avenue to Thirteenth street, d. 1., 1896.

Maryland avenue.

Sixth street to Canal W., No. 376 (B. P. W.).
Fifth to Sixth street W., No. 557 (B. P. W.).
First to Third street W., No. 720 (B. P. W.).
Second to Third street E., No. 811 (B. P. W. & C.).
Thirteenth to Fourteenth st., No. 815 (B. P. W.).
Tenth to Thirteenth-and-a-half street, No. 854 (B. P. W. & C.).
Thirteenth to Fourteenth street W., No. 1067 (B. P. W.).
Third to Fourth street E., No. 589 (Commsrs.).
Third to Four-and-a-half street W., No. 589 (Commsrs.).
Seventh to Eighth st. E., No. 730 (Commsrs.).
Sixth to Seventh street E., No. 954 (Commsrs.).

Thirteenth to Fourteenth street E., No. 1170 (Commsrs.).

First to Second street E., No. 1195 (Commsrs.).
Elliott street (basin), No. 1256 (Commsrs.).
G street N. (basin), No. 1256 (Commsrs.).
Fourteenth st. E. (basins), No. 1256 (Commsrs.).
Eleventh street E. (basin), No. 1256 (Commsrs.).
Twelfth street W., siphon, No. 1913 (Commsrs.).
Third to Four-and-a-half street W., No. 2055 (Commsrs.).
Thirteenth to Fourteenth street E., d. 1., 1878.
Fourteenth to Fifteenth street E., north side, d. 1., 1879.
Second to Third street E., d. 1., 1885.
Fourteenth to Fifteenth street E., d. 1., 1887.
Fourteenth to Fifteenth street E., d. 1., 1888.
Thirteenth to Fourteenth street E., d. 1., 1889.
Third to Four-and-a-half street W., d. 1., 1890.
E street N. (basin), d. 1., 1890.
Second to Third street E., d. 1., 1891.
Thirteenth to Fourteenth street E., d. 1., 1893.
Twelfth to Thirteenth street W., d. 1., 1893.
Fourth to Fifth street E., d. 1., 1896.
First to Second street E., siphon, d. 1., 1896.
Ninth to Tenth street W., d. 1., 1897.

Massachusetts avenue.

Fourth to Fifth, culvert crossing, between, Sept. 30, 1847 (C. W.).
Sixth to Seventh street, Nov. 21, 1867 (C. W.).
Fourteenth to Fifteenth street, Nov. 16, 1868 (C. W.), not constructed.
Ninth to Fifteenth street W., No. 93 (B. P. W.).
New Jersey avenue to Seventh street W., No. 406 (B. P. W.).
Fourteenth to Sixteenth street W., No. 524 (B. P. W.).
Nineteenth to Twenty-second street, north side, No. 654 (B. P. W.).
Eighteenth street to Dupont Circle, No. 677 (B. P. W.).
Delaware avenue to North Capitol street, No. 702 (B. P. W. & C.).
Sixth to Seventh street W., No. 896 (B. P. W.).
Seventh to Eleventh street E., No. 811 (B. P. W. & C.).
Seventeenth to Eighteenth street W., No. 5 (Commsrs.).
Eighth to Eleventh St. E., No. 107 (Commsrs.).
Third to Fourth street E., No. 587 (Commsrs.).
North Capitol to First street W., No. 587 (Commsrs.).
Second to Third street E., No. 589 (Commsrs.).
Seventh to Eighth street E., No. 589 (Commsrs.).
North Capitol street to New Jersey avenue, No. 593 (Commsrs.).
Sixth to Seventh street E., No. 954 (Commsrs.).
R street N. (basin), No. 1171 (Commsrs.).
Twenty-second street, W. (basin), No. 1171 (Commsrs.).
S to T street N. (basins), No. 1171 (Commsrs.).
Twenty-third street W. (basin), No. 1256 (Commsrs.).
Tenth street E. (basin), No. 1256 (Commsrs.).
Twenty-second to Twenty-third street W., No. 1267 (Commsrs.).
Twenty-second to Twenty-third street W., No. 1270 (Commsrs.).
Twenty-first st. W., siphon, No. 1913 (Commsrs.).
Ninth to Eleventh st. E., No. 2056 (Commsrs.).
North Capitol to First street E., d. 1., 1876.
First to E street E., north side, d. 1., 1877.
Third to Fourth street E., d. 1., 1877.
Fifth to Sixth street W., north side, d. 1., 1881.
Seventeenth to Eighteenth street W., both sides, d. 1., 1880.
Sixteenth to Seventeenth street W., south side, d. 1., 1881.
Eighteenth street to Connecticut avenue, south side, d. 1., 1880.
Twenty-first to Twenty-second streets, south side, d. 1., 1883.
Seventeenth to Eighteenth street W., d. 1., 1884.
Second to Third street W., d. 1., 1885.
Sixth to Seventh street E., d. 1., 1886.
Seventeenth to Eighteenth street W., d. 1., 1887.
Sixth to Seventh street E., d. 1., 1887.
G street N. (basin), d. 1., 1888.
Second to Third street W., d. 1., 1889.

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Twelfth to Thirteenth st. W., d. l. 1891, Repl.
 First to Second street E., d. l. 1891.
 Sixth street E., d. l. 1892.
 Seventh street E., d. l. 1892.
 First to Second street E., d. l. 1892.
 Fifth to Sixth street W., d. l. 1893.
 Fourth to Fifth street W. (basin), d. l. 1894.
 Second street E. (basin), d. l. 1894.
 D street to Third street E., d. l. 1894.
 Seventeenth to Eighteenth street W. (basins),
 d. l. 1895.
 Sixteenth to Seventeenth street W. (basin), d.
 l. 1895.
 Fifteenth to Sixteenth street E., d. l. 1896.
 Fourth to Fifth street W., d. l. 1896.
 Sixth to Seventh street W., d. l. 1896, Repl.
 Fourth to Fifth street W., d. l. 1896.
 Florida avenue NW corner (basin), d. l. 1896.
 Sheridan circle, d. l. 1897.
 Third to Fourth street E., d. l. 1897.
 A to Thirteenth street E., d. l. 1897.
 A to East Capitol street (basin), d. l. 1897.

McLean street.

Third to Four-and-a-half street W., d. l. 1896,
 Repl. (See square No. 546.)

Mill street.

East to P street, d. l. 1894.
 East to Q street, d. l. 1896.

Milwaukee street.

Seventh to Eighth street, d. l. 1897.

Missouri avenue.

Third to Sixth street W., No. 68 (B. P. W.).
 Four-and-a-half street W. (basins), No. 728
 (Comms.).
 Four-and-a-half to Sixth street W., d. l. 1885.

Monroe street, Anacostia.

Harrison street (basin), No. 1473 (Comms.).
 Harrison street to Eastern Branch (basin),
 No. 1473 (Comms.).
 Harrison to Washington street, No. 1506
 (Comms.).
 Jefferson to Pleasant st., No. 1797 (Comms.).
 Jefferson street to Eastern Branch, d. l. 1879.
 Jefferson to Maple street, d. l. 1889.
 Jefferson to Washington street, d. l. 1894.
 Johnson to Buchanan street, d. l. 1894.
 Harrison street to Eastern Branch, d. l. 1896.
 Buchanan street to Navy place, d. l. 1897.
 Maple avenue to Navy place, d. l. 1897.

Moores lane.

Elm to Wilson street, d. l. 1895.

Morgan street.

Second to Kirby street, d. l. 1894.
 Second to Kirby street, d. l. 1895.
 Lydecker avenue to Lamar place, d. l. 1897.

Mount Vernon place.

Seventh to Eighth street, south side, No. 587
 (B. P. W.).
 Seventh to Ninth street, No. 177 (Comms.).

Myrtle street.

North Capitol to First street, contract No. 1171
 (Comms.).
 North Capitol to First street (basin), d. l. 1890.

Navy avenue, Anacostia.

Monroe street, west of, No. 832 (Comms.).
 Nichols avenue to Eastern Branch, No. 1480
 (Comms.).
 Shannon place, SW corner (basin), d. l. 1895.

Newark street.

Fifth to Seventh street W., d. l. 1896.
 New Hampshire ave. to Seventh st. W., d. l. 1896.
 Fifth to Seventh street W., d. l. 1897.

New Hampshire avenue.

Q to Sherman street, No. 355 (B. P. W. & C.).
 I to K street N., No. 403 (B. P. W. & C.).
 M to Twenty-first street, No. 615 (B. P. W.).
 Massachusetts ave. to R st., No. 763 (B. P. W.).
 T to Seventeenth street, No. 766 (B. P. W. & C.).
 V to W street N., No. 849 (B. P. W. & C.).
 L to M street, No. 589 (Comms.).
 L street (basin), No. 728 (Comms.).
 M street (basin), No. 728 (Comms.).
 R to S street, No. 826 (Comms.).
 Swan street (basin), No. 1171 (Comms.).
 Seventeenth street (basin), No. 1171 (Comms.).
 Riggs street (basin), No. 1171 (Comms.).
 Washington circle to L st., No. 1195 (Comms.).
 U street (basins), No. 1256 (Comms.).
 Washington circle to M st., No. 1270 (Comms.).
 Dupont circle, siphon, No. 1913 (Comms.).
 T to U street, No. 2206 (Comms.).
 K to L street, west side, d. l. 1877.
 T to U street, both sides, d. l. 1877.
 H to I street N., east side, d. l. 1876.
 L to M street, east side, d. l. 1879.
 O street to Dupont circle, d. l. 1880.
 Nineteenth to Twentieth st., east side, d. l. 1881.
 L to M street, west side, d. l. 1882.
 M to N street, east side, d. l. 1882.
 N to O street, west side, d. l. 1884.
 P to Q street, east side, d. l. 1880.
 Twenty-first to N street, east side, d. l. 1883.
 L to M street, east side, d. l. 1889.
 L to M street, east side, d. l. 1887.
 R street, d. l. 1889.
 N to O street, d. l. 1890.
 Twentieth street (basin), d. l. 1890.
 Dupont circle, d. l. 1890.
 H to I street, d. l. 1890.
 L to M street, d. l. 1891.
 Dupont circle to Q street, d. l. 1892.
 Brightwood avenue to Eighth street, D. C. in-
 spection, 1893.
 F to G street N., d. l. 1894.
 S street to Oregon avenue, d. l. 1894.
 Q street to Dupont circle, d. l. 1895.
 H to I street, d. l. 1895.
 Twenty-first street (basin), d. l. 1895.
 M to N street, d. l. 1896.
 Oregon avenue to T street, d. l. 1896.
 Oregon avenue to S street, d. l. 1897.
 M to N street, d. l. 1897.
 I street NE corner (basin), d. l. 1897.
 I street, d. l. 1897.

New Jersey avenue.

Q to R street N., No. 407 (B. P. W.).
 D to Canal street S., No. 414 (B. P. W.).
 F to G street N., west side, No. 625 (B. P. W.).
 C street S. (basin), No. 686 (B. P. W.).
 D to E street S., No. 712 (B. P. W.).
 D to H street N., No. 760 (B. P. W.).
 Ist. to New York ave. N., No. 760 (B. P. W.).
 P to Q street N., No. 760 (B. P. W. & C.).
 B to C street N., No. 902 (B. P. W.).
 D to G street N., No. 1040 (B. P. W.).
 M to N street S., No. 584 (Comms.).
 O to Q street N., No. 589 (Comms.).
 E street N. (basin), No. 728 (Comms.).
 Grant to Princeton street, No. 832 (Comms.).
 Howard to Thirteenth st., No. 838 (Comms.).
 Eighth to Irving street, No. 1012 (Comms.).
 L to M street N., No. 1169 (Comms.).
 Pierce street (basin), No. 1171 (Comms.).
 L to M street S., No. 1183 (Comms.).
 K to L street S., No. 1270 (Comms.).
 B to C street S., No. 1488 (Comms.).
 C to D street S., No. 1473 (Comms.).
 N st. to New York ave. N., No. 1723 (Comms.).
 K to L street N. (replacing), No. 1800 (Comms.).
 R st. to Rhode Island ave., east side, d. l. 1888.
 Q to R street N., west side, d. l. 1882.
 P to Q street N., d. l. 1885.

Q to Franklin street, d. l. 1886.
P street N., d. l. 1887.
D to E street S., d. l. 1887.
O to P street N., d. l. 1887.
C to D street S., d. l. 1889.
O to P street N., d. l. 1889.
E to F street N., d. l. 1890.
Ivy to E street S., d. l. 1891.
New York avenue to L street, d. l. 1892.
D to E street S., d. l. 1892.
Princeton street N., d. l. 1893.
P to Franklin street N., d. l. 1894.
G street N. (basin), d. l. 1894.
B to C street N., d. l. 1894, Repl.
E to F street N., d. l. 1895.
North Carolina avenue (basin), d. l. 1895.

New York avenue.

Fourteenth to Fifteenth street, March 1, 1866 (C. W.).
North Capitol to Seventh street W., No. 80 (B. P. W.).
Fifteenth street (basins), No. 162 (B. P. W.).
Ninth to Fifteenth street, north side, No. 190 (B. P. W.).
Ninth to Fifteenth street W., south side, No. 191 (B. P. W.).
Twentieth st. W., crossing, No. 744 (B. P. W.).
Seventeenth to Eighteenth street W., No. 797 (B. P. W.).
Nineteenth to Twentieth street W., No. 909 (B. P. W.).
Ninth to Fifteenth st. W., No. 177 (Comms.).
Fourteenth to Fifteenth street W., No. 589 (Comms.).
Sixth street W. (basin), No. 728 (Comms.).
Sixth to Seventh street W., No. 826 (Comms.).
Fourth street W. (basin), No. 1473 (Comms.).
Ninth to Tenth street W. (basin), No. 1473 (Comms.).
Seventeenth to Eighteenth street W., d. l. 1886.
Twenty-first to Twenty-second st. W., d. l. 1890.
Seventeenth to Eighteenth street W., d. l. 1891.
Fourth street to Fifteenth st. W. (basin), d. l. 1894.
North Capitol to First street E., d. l. 1894.
Fourth street to Fifteenth street W., d. l. 1894.
Nineteenth to Twentieth street W., d. l. 1894.
Ninth to Tenth street W., d. l. 1895, Repl.
Twenty-first to Twenty-second st. W., d. l. 1895.
Tenth street W. (basin), d. l. 1895.
New Jersey avenue to M street N., d. l. 1896.
Thirteenth to Fourteenth street W., d. l. 1896.
M street N., crossing, d. l. 1896.
Florida avenue to B. and O. R., d. l. 1897.

Nichols avenue, Anacostia.

(See Monroe street.)

North Capitol street.

B to C street, east side, No. 83 (B. P. W.).
E to O street, No. 832 (B. P. W.).
K street N. (basin), No. 73 (Comms.).
O to P street, No. 229 (Comms.).
C to L street, No. 589 (Comms.).
E street (basins), No. 728 (Comms.).
H street (basin), No. 728 (Comms.).
H to Defrees street, No. 730 (Comms.).
G to H street, No. 826 (Comms.).
M to N street, No. 826 (Comms.).
L street (basin), No. 826 (Comms.).
K street (basins), No. 826 (Comms.).
Pierce street (basin), No. 1171 (Comms.).
Q street (basin), No. 1256 (Comms.).
R street (basin), No. 1256 (Comms.).
Truxton Circle (basin), No. 1256 (Comms.).
R to Randolph street, No. 1715 (Comms.).
O to P street, replacing, No. 2082 (Comms.).
North Capitol street sewer, June 30, 1877.
M to N street (embankment over sewer), Dec. 12, 1877.
H to I street, east side, d. l. 1877.
K to L street, d. l. 1886.
B to C street, d. l. 1887.
K to L street, d. l. 1887.
N to O street, d. l. 1887.

K to L street, d. l. 1888.
E street (basin), d. l. 1889.
G to H street, d. l. 1889.
Myrtle street (basin), d. l. 1890.
E street (basin), d. l. 1891.
M to N street, d. l. 1891.
New York avenue to Hanover place, d. l. 1891.
Pierce to L street, d. l. 1892.
G street, d. l. 1893, Repl.
P to Q street, d. l. 1893.
M to N street, d. l. 1893.
Defrees to I street, d. l. 1896.
P street to Florida avenue, d. l. 1896.
Pierce to M street, d. l. 1897.
Patterson to N street, d. l. 1897.

North Carolina avenue.

Sixth to Seventh street, No. 954 (Comms.).
First street to New Jersey avenue, No. 1287 (Comms.).
B to Fourteenth street, No. 2225 (Comms.).
Fifth to Sixth street E., north side, d. l. 1882.
Tenth to Eleventh st. E., north side, d. l. 1885.
Sixth to Seventh street E., d. l. 1885.
Seventh to Eighth street E., d. l. 1886.
Ninth to Tenth street E., d. l. 1886.
Sixth to Seventh street E. (basin), d. l. 1889.
Ninth to Tenth street E., d. l. 1890.
Ninth to Tenth street E., d. l. 1892.
Eighth to Ninth street E., d. l. 1893.
First to Second street E., d. l. 1894.
First to Second street E., d. l. 1895.
Thirteenth to Fourteenth street E., d. l. 1897.

Oak street.

Harewood avenue to Second street, d. l. 1895.
Harewood avenue to Second street, d. l. 1894.

Ohio avenue.

Twelfth to Thirteenth st., No. 1723 (Comms.).
Fourth street to Fifteenth street, north side, d. l. 1876.
Fourth street to Fifteenth street, d. l. 1886.
Fourth street to Fifteenth street, d. l. 1887.

Olive street.

Twenty-ninth street to Rock Creek, No. 1796 (Comms.).
Twenty-eighth to Twenty-ninth st., d. l. 1880.

Omaha street.

Eighth street to New Hampshire avenue, D. C. inspection, 1893.
Fifth to Seventh street, d. l. 1896.
Fifth to Seventh street, d. l. 1897.
Fifth to Illinois street, d. l. 1897.

Ontario avenue.

Superior to Erie street, No. 1917 (Comms.).

Oregon avenue.

Seventeenth to Eighteenth street, d. l. 1890.
Seventeenth to Eighteenth street, d. l. 1893.
New Hampshire avenue to Eighteenth street, d. l. 1895.

Park street.

Fourteenth to Sixteenth st., No. 832 (Comms.).
Piney Branch road, siphon, No. 1913 (Comms.).
Seventeenth street to Piney Branch road, d. l. 1894.

Patterson street.

First to Second street E., No. 2008 (Comms.).
North Capitol to First street E., d. l. 1888.
North Capitol to First street E., d. l. 1891.
North Capitol to First street E., d. l. 1893.

Pennsylvania avenue.

Four-and-a-half to Sixth st., July 2, 1817 (C. W.).
 Second to Four-and-a-half street. Nov. 20, 1829 (C. W.).
 Seventeenth to Eighteenth street, May 16, 1867 (C. W.).
 Nineteenth to Twentieth street, May 16, 1867 (C. W.).
 Seventeenth street to Jackson place, May 9, 1868 (C. W.).
 Fourteenth to Fifteenth street, May 24, 1869 (referred to in act of April 18, 1870, as having been constructed in north side). (C. W.).
 First to Eighth street E., No. 71 (B. P. W.).
 Fourth to Sixth street E. (both sides, reservation), No. 248 (B. P. W.).
 Seventh to Eighth street E., No. 297 (B. P. W.).
 Tenth to Twelfth street E., No. 391 (B. P. W.).
 Ninth to Tenth street W., repairs, No. 137 (Comms.).
 Eighth to Ninth street E., No. 569 (Comms.).
 Sixth to Seventh street E., No. 730 (Comms.).
 Twelfth to Thirteenth st. E., No. 954 (Comms.).
 Tenth street E. (basin), No. 957 (Comms.).
 Eleventh street E. (basin), No. 957 (Comms.).
 Twelfth street E. (basins), No. 1171 (Comms.).
 Thirteenth st. E. (basin), No. 1171 (Comms.).
 Twenty-second street to Washington circle, No. 1270 (Comms.).
 Seventeenth to Eighteenth street W., No. 1270 (Comms.).
 Sixth to Seventh street W., No. 1897 (Comms.).
 Fifteenth street to reservation No. 55 E., No. 2183 (Comms.).
 Fourteenth street to Georgia avenue E., No. 2184 (Comms.).
 Twenty-fifth to Twenty-sixth st. W., d. l., 1879.
 Tenth to Eleventh st. W., south side, d. l., 1879.
 Fifteenth to Sixteenth street W., d. l., 1883.
 Twelfth to Thirteenth street E., d. l., 1886.
 Nineteenth to Twentieth street W., d. l., 1887.
 Twelfth to Thirteenth street E., d. l., 1889.
 Tenth to Eleventh street W., d. l., 1889.
 G street E., d. l., 1889.
 Twelfth street E., d. l., 1889.
 Thirteenth street E., d. l., 1889.
 Third to Four-and-a-half street W., d. l., 1890.
 Ninth to Tenth street W., d. l., 1890.
 Third to Four-and-a-half st. W., d. l., 1890. Repl.
 Twenty-fifth to Twenty-sixth st. W., d. l., 1890.
 Seventeenth to Eighteenth street W., north side, d. l., 1891.
 Third to Fourth street E., d. l., 1891. Repl.
 Eleventh to Twelfth street W.,¹ d. l., 1892. Repl.
 Thirteenth street E., d. l., 1892.
 Fourth street E. (basin), d. l., 1893.
 Eighth street E. (basin), d. l., 1893.
 South Carolina avenue (basin), d. l., 1893.
 Tenth to Eleventh street W., d. l., 1893.
 First to Second street W., d. l., 1893.
 Fifteenth street to Kentucky avenue, d. l., 1894.
 Twenty-eighth to Twenty-ninth street W., d. l., 1894.
 Sixth to Seventh street E. (siphon), d. l., 1894.
 Tenth to Eleventh street E., d. l., 1894.
 Sixth to Seventh street W., d. l., 1895.
 Ninth to Tenth street W., d. l., 1895.
 Fifteenth st. to Kentucky ave. E., d. l., 1895.
 Kentucky avenue (basins), d. l., 1895.
 Fifteenth street E. (basin), d. l., 1895.
 Thirteenth to G street E., d. l., 1897.
 Sixth to Seventh street W., d. l., 1897.
 Washington circle, d. l., 1897. Repl.

Phelps place.

S street to Bancroft place, d. l., 1896.
 Bancroft place to California avenue, d. l., 1897.

Philadelphia street.

Fifth to Illinois street, d. l., 1896.

Pierce place.

Fourteenth to Fifteenth street, both sides, No. 465 (B. P. W.).
 Fourteenth to Fifteenth street, d. l., 1889.

Pierce street.

First street to New Jersey avenue W., No. 730 (Comms.).
 North Capitol to First street W., d. l., 1885.
 North Capitol to First street W., d. l., 1889.
 North Capitol to First street W., d. l., 1891.
 First street to New Jersey avenue W., d. l., 1892.

Pierce street, Anacostia.

Washington to Jackson street, d. l., 1895.
 High street, junction with (basin), d. l., 1897.

Piney Branch road.

Howard to Laurel avenue, No. 1267 (Comms.).
 Park street to Laurel ave., No. 1270 (Comms.).
 Howard avenue, north of (basin), d. l., 1894.

Piney Branch sewer.

Rock Creek to Fourteenth street road, No. 1724 (Comms.).
 Fourteenth street road, west of, No. 1806 (Comms.).

Pleasant street.

Fillmore to Valley street, d. l., 1895.

Polk street, Anacostia.

High to Jefferson street, d. l., 1888.
 Valley to Jefferson street, d. l., 1889.

Pomeroy street.

Linden to Larch street, d. l., 1894.
 Third to Four-and-a-half st., No. 1468 (Comms.).

Poplar street.

Twenty-seventh to Twenty-eighth street, No. 954 (Comms.).
 Twenty-seventh to Twenty-eighth st., d. l., 1893.

Portner place.

U to V street, d. l., 1888.

Potomac street.

M to Prospect street, No. 778 (B. P. W.).
 M street to Chesapeake and Ohio Canal, No. 1468 (Comms.).
 Prospect street, siphon, No. 1913 (Comms.).
 Water street to Old Fish Market, No. 2182 (Comms.).
 M st. to Chesapeake and Ohio Canal, d. l., 1890.
 M to N street, d. l., 1892. Repl.
 Prospect to N street, d. l., 1893.
 Prospect to N street, d. l., 1894.
 M to Prospect street, d. l., 1894. Repl.
 Water street to Chesapeake and Ohio Canal, d. l., 1896.
 N to O street, d. l., 1897.

¹ Original sewer constructed under contract with C. W.

Princeton street.

Thirteenth street to Sherman avenue, No. 2323 (Commsr.).
Thirteenth to Fourteenth street, d. l., 1893.
Thirteenth to Fourteenth street, d. l., 1894.
Fourteenth street, crossing, d. l., 1897.
Thirteenth st., NW. corner (basin), d. l., 1897.

Prospect street.

Thirty-second to Potomac st., No. 634 (B. P. W.).
Thirty-fifth to Thirty-sixth street W., No. 826 (Commsr.).
Potomac to Thirty-fourth street, No. 826 (Commsr.).
Thirty-sixth to Thirty-seventh street, No. 1723 (Commsr.).
Potomac to Thirty-second street, d. l., 1887.
Thirty-sixth to Thirty-seventh st., d. l., 1889.
Thirty-seventh to Thirty-eighth st., d. l., 1895.

Providence street.

Tenth to Twelfth street E., d. l., 1897.
Ninth to Tenth street, d. l., 1897.

Quander street.

New Jersey avenue to First street, d. l., 1894.

Quincy street.

Lincoln avenue to First street E. (basins), No. 1473 (Commsr.).
Lincoln avenue to Eckington place, No. 1566 (Commsr.).
Seventh to Eighth st. W., No. 2387 (Commsr.).
Lincoln avenue to Eckington place, d. l., 1892.
North Capitol st. to Florida ave., d. l., 1896.
Florida ave., northeast corner (basin), d. l., 1897.

Randolph street.

Third to Fourth street E., d. l., 1895.

Rhode Island avenue.

Fourteenth to Eighteenth st., No. 272 (B. P. W.).
Seventeenth street to Connecticut avenue, No. 696 (B. P. W.).
Ninth to Tenth street, No. 770 (B. P. W.).
Seventh street to New Jersey avenue, No. 788 (B. P. W.).
Ninth to Twelfth street, No. 872 (B. P. W.).
Sixth st. to Florida avenue, No. 941 (B. P. W.).
Sixth st. to New Jersey ave., No. 1038 (B. P. W.).
Fourteenth st., crossing, No. 589 (Commsr.).
Sixteenth to Seventeenth street, No. 589 (Commsr.).
Fourteenth to Sixteenth street, No. 501 (Commsr.).
Fifth to Sixth street, No. 730 (Commsr.).
Sixth to Seventh street, replacing, No. 826 (Commsr.).
Marion street (basin), No. 1171 (Commsr.).
Seventh to Eighth st. W., No. 1225 (Commsr.).
Seventh street (basin), No. 1256 (Commsr.).
Thirteenth to Fourteenth street W., No. 1270 (Commsr.).
Eighth to Columbia street, No. 1287 (Commsr.).
Fifth to Ninth street E., No. 2217 (Commsr.).
New Jersey to Florida avenue, d. l., 1880.
Twelfth st. to Vermont ave., north side, d. l., 1876.
Eleventh to Twelfth street, d. l., 1886.
Seventh to Eighth street (basin), d. l., 1888.
Sixth to Seventh street W., d. l., 1888, Repl.
Eleventh to Twelfth street, d. l., 1889.
Marion to Seventh street, d. l., 1890.
Twelfth street, crossing, d. l., 1891.
Fifth street to New Jersey avenue, d. l., 1892.
Fourteenth st. to Iowa circle, d. l., 1895, Repl.
Connecticut avenue, east of (basin), d. l., 1895.
New Jersey to Florida ave., siphon, d. l., 1896.

Richardson place.

New Jersey avenue to Fourth street, d. l., 1889.

Ridge street.

Fourth to Fifth street W., No. 954 (Commsr.).

Riggs street.

Thirteenth to Fourteenth street, south side, d. l., 1881.
Thirteenth to Fourteenth street, south side, d. l., 1882.
Thirteenth to Fourteenth street, south side, d. l., 1885.
Thirteenth to Fourteenth street, south side, d. l., 1886.
Seventeenth to Eighteenth street, d. l., 1894.

Roanoke street.

Thirteenth to Fourteenth street, d. l., 1891.
Thirteenth to Fourteenth street, d. l., 1895.
Thirteenth to Fourteenth street, d. l., 1897.
Thirteenth st. to Sherman avenue, d. l., 1897.

Rock Creek and B street intercepting sewer.

P street to Lyon's Mill, No. 1197 (Commsr.).
Massachusetts avenue to Woodley Bridge, No. 1382 (Commsr.).
Massachusetts avenue to P street, No. 1476 (Commsr.).
Woodley road to Piney Branch, No. 2050 (Commsr.).
Twenty-fifth and Water to P Street Bridge;
Twenty-seventh street from M to O street, No. 2220 (Commsr.).

Rock Creek Church road.

Spring road to New Hampshire avenue (sewer and basin), d. l., 1894.
New Hampshire avenue to Eighth st., d. l., 1894.
Eighth street extended (basin), d. l., 1895.
Brightwood avenue to Spring road, No. 1863 (Commsr.).

Rock street.

M to Olive street, d. l., 1885.

Rosedale street.

Fifteenth to Sixteenth st., No. 1715 (Commsr.).
Fifteenth to Sixteenth st., No. 1723 (Commsr.).
Sixteenth to Seventeenth st., d. l., 1893.

Sampson street.

Sixteenth to Seventeenth street, No. 1034 (B. P. W. & C.).
Fifteenth to Sixteenth street, No. 1094 (B. P. W. & C.).
Seventeenth to Eighteenth st., center, d. l., 1877.

School street SW.

Four-and-a-half to Sixth st., No. 884 (B. P. W.).

School street NW.

Grant to Park street, d. l., 1897.
Park street, from southward, d. l., 1895.

Scott avenue.

Brightwood avenue to Sixth street, d. l., 1896.
Brightwood avenue to Warder street (basin), d. l., 1897.

Seaton street.

North Capitol to First street W., d. l., 1896.

Scott circle.

Massachusetts avenue to Sixteenth street, No. 591 (Commsrs.).
N st. to Rhode Island ave., d. l., 1892, Repl.

Shannon place, Anacostia.

Nichols avenue to railroad, No. 1202 (Commsrs.).

Sheridan avenue.

Sherman avenue to Seventh street, No. 2008 (Commsrs.).
Brightwood avenue, crossing, d. l., 1895.
Brightwood avenue, from eastward, d. l., 1896.
Brightwood avenue, southwest and southeast corners (basins), d. l., 1896.

Sheridan circle.

Massachusetts avenue to Twenty-third street, d. l., 1897.

Sherman avenue.

Irving to Bismark street, No. 832 (Commsrs.).
Irving to Harvard street, No. 952 (Commsrs.).
Harvard to Steuben street, No. 1473 (Commsrs.).
Marshall to Steuben street, No. 1476 (Commsrs.).
Grant ave. to Irving st., No. 1715 (Commsrs.).
Marshall to Farragut st., No. 1924 (Commsrs.).
Whitney avenue to Farragut street, No. 2008 (Commsrs.).
Wallach street (basin), SW. and SE. corners, d. l., 1896.
Marshall street, SE. and NE. corners (basins), d. l., 1896.
Sheridan street, SE. and NE. corners (basins), d. l., 1896.
Grant street, NW. corner (basin), d. l., 1896.
Garfield Hospital, leading from, d. l., 1896.
Harvard street, NE. and NW. corners (basins), d. l., 1897.
Princeton street, NW. and NE. corners (basins), d. l., 1897.
Bismark street, NE. and NW. corners, d. l., 1897.
Irving street, NW. corner (basin), d. l., 1897.
Whitney avenue, SE. corner (basin), d. l., 1897.

Slash Run sewer.

Twenty-second and M streets to Rock Creek, No. 209 (B. P. W.).
Twentieth and L streets, No. 648 (B. P. W.).
N street to New Hampshire avenue, No. 223 (Commsrs.).

South Capitol street.

B street to canal, November 15, 1870 (C. W.), not constructed.
D street to canal, No. 65 (B. P. W.).
B to D street, No. 88 (B. P. W.).
G to K street, No. 853 (B. P. W. & C.).
E to G street, No. 1012 (B. P. W.).
C to D street, d. l., 1889.
E street to Virginia avenue, d. l., 1889.
D street, d. l., 1893.
Ivy street (basins), d. l., 1893.
N to O street, d. l., 1893.
N to O street, d. l., 1894.
C to D street, d. l., 1895.
E street, NE. corner (basin), d. l., 1895.

South street.

Thirty-first to Thirty-second street, d. l., 1897.

South Carolina avenue.

Third to Fourth street, No. 853 (B. P. W.).
Third street E. crossing, No. 843 (B. P. W.).
Third to Fifth street, No. 631 (Commsrs.).
Sixth to Seventh street, No. 631 (Commsrs.).
Tenth to Eleventh street, No. 1468 (Commsrs.).
Eleventh to Twelfth street, d. l., 1886.
Eleventh to Twelfth street, d. l., 1887.
Twelfth to Thirteenth street, d. l., 1888.
Eleventh to Twelfth street, d. l., 1889.
Twelfth to Thirteenth street, d. l., 1890.
Eleventh to Twelfth street, d. l., 1892.
Fourteenth to Fifteenth street, d. l., 1895.
Thirteenth street to Kentucky ave., d. l., 1896.
Ninth to Tenth street, d. l., 1896.
C street S. (basin), d. l., 1897.

Spring road.

Holmead avenue to Fourteenth street, No. 1473 (Commsrs.).
Brightwood avenue to Fourteenth street, No. 1888 (Commsrs.).
Thirteenth to Fourteenth street, d. l., 1894.
Rock Creek (church road (basins), d. l., 1894.
Thirteenth street extended (basin), d. l., 1895.

Spruce street.

Linden street (basin), No. 1256 (Commsrs.).
Larch street (basin), No. 1473 (Commsrs.).
Linden street to Harewood avenue, d. l., 1891.
Third to Fourth street, d. l., 1891.
Bohrer street, d. l., 1896.
Bohrer to Larch street, d. l., 1897.

Stanton place.

Fifth to Sixth street, d. l., 1889.
Fifth to Sixth street, d. l., 1893.

Steuben street.

Seventh street to Sherman avenue, No. 1797 (Commsrs.).
Sherman to New Jersey avenue, d. l., 1896.

Stoughton street.

Fourteenth to Fifteenth street, d. l., 1885.
Fourteenth to Fifteenth street, d. l., 1887.
Fourteenth to Fifteenth street, d. l., 1888.
Fourteenth to Fifteenth street, d. l., 1889.

Sunderland place.

Nineteenth to Twentieth st., center, d. l., 1883.
Nineteenth to Twentieth street, d. l., 1885.

Superior street.

Champlain to Meridian ave., No. 1171 (Commsrs.).
Central avenue (basin), d. l., 1895.
Ontario avenue (basin), d. l., 1895.

Tennallytown road.

Industrial Home School, near (basins), d. l., 1893.

Tennessee avenue.

D to F street N., No. 820 (Commsrs.).
E to F street, No. 824 (Commsrs.).
A to B street, No. 954 (Commsrs.).
D to E street (basin), No. 957 (Commsrs.).
B to D street, No. 972 (Commsrs.).
E street (basin), No. 1256 (Commsrs.).
F street (basin), No. 1256 (Commsrs.).
Fourteenth street (basin), No. 1256 (Commsrs.).
B street (crossing), No. 1462 (Commsrs.).

A street N. (basin), No. 1473 (Commsr.).
E to F street (basin), d. l., 1890.
C street (basin), d. l., 1895.

Tiber sewer.

Pennsylvania avenue, build brick arch bridge over, at Aug. 13, 1817. (Repealed Oct. 9, 1817).
Pennsylvania avenue and Second street, repair bridge, November 26, 1840.
D street N., rebuild bridge, July 5, 1850.
Pennsylvania avenue to C street, Congress urged to continue arching from, to, November 27, 1855.
Jackson alley, rebuild bridge, October 6, 1866.
Pennsylvania avenue to B street N., Congress urged to arch, December 15, 1866.
H street N., stone and brick arch, December 22, 1866.
North Capitol street, at, December 12, 1868. (Not built.)
Second and F streets NE., extend culvert, January 21, 1869.
K st. N., construct bridge, December 28, 1869.

Appropriations by Congress:

Repair north end across Pennsylvania avenue, June 30, 1834.
Rebuild bridge crossing Pennsylvania avenue, August 26, 1842.
Indiana avenue, construct culvert, August 12, 1848.
Indiana avenue, complete culvert, August 18, 1856.
Botanic Garden, change creek through, into a sewer, July 2, 1864.
Botanic Garden, complete sewer through, July 28, 1866; March 2, 1867; and July 20, 1868.

NOTE.—Tiber sewer through Botanic Garden constructed during the years 1864 and 1869. Commenced by Commissioner B. B. French in 1864 and completed by Gen. N. Michler, U. S. A., 1867 to 1869. Cost, \$53,150.

Towpath Chesapeake and Ohio Canal.

Thirty-first street to Rock Creek, No. 1797 (Commsr.).
Thirty-first street, crossing, d. l., 1894.
Twenty-eighth to Thirty-first street, basin connection, d. l., 1894.

Trinidad avenue.

Florida ave. to M st., No. 1716 (Commsr.).
M street N., d. l., 1894.
Florida avenue to M street (basin), d. l., 1894.
Long Meadows subdivision addition (basin), d. l., 1894.
Levis to King street, d. l., 1897.

Trumbull street.

Sixth to Seventh street, No. 1195 (Commsr.).
Sixth to Seventh street W. (basin), d. l., 1891.

Truxton circle.

Florida avenue to Q street, d. l., 1894.

Union street.

M to O street S., No. 954 (Commsr.).
N to O street S., d. l., 1887.

University place.

Welling to Huntington street, d. l., 1889.

Valley street.

Q to U street, No. 1468 (Commsr.).
Q to U street, No. 1473 (Commsr.).
P to Q street, d. l., 1893.

P to U street, d. l., 1895.
Pleasant street (basins), d. l., 1895.

Van street

Third to Four and-a-half street, d. l., 1896.
First street to New Jersey avenue, d. l., 1897.

Vermont avenue.

Massachusetts avenue to K street, No. 84 (B. P. W.).
R to T street, N., No. 402 (B. P. W. & C.).
M to P street, east side, No. 682 (B. P. W.).
H to I street, No. 606 (B. P. W.).
M to P street, No. 762 (B. P. W.).
Iowa circle to Q street, No. 835 (B. P. W. & C.).
Iowa circle to Q st., No. 1074 (B. P. W. & C.).
T to U street, No. 730 (Commsr.).
S to T street, No. 954 (Commsr.).
L to M street, No. 1468 (Commsr.).
Eleventh street (basins), No. 1473 (Commsr.).
Iowa Circle to Q street, d. l., 1876.
Q to R street, west side, d. l., 1877.
T to U street, east side, d. l., 1877.
Q to R street, east side, d. l., 1885.
U to V street, d. l., 1887.
U to V street, d. l., 1888.
Q to R street, d. l., 1890.
Q to R street, d. l., 1891.
N to O street, d. l., 1891.
N to O street, d. l., 1892, Repl.
O street (basin), d. l., 1894.
K to L street, d. l., 1894, Repl.
Q to R street, d. l., 1895.
Tenth street (basin), d. l., 1895.
S street (basin), d. l., 1896.
L to M streets, both sides, siphons, d. l., 1896.

Vernon place.

Eighteenth to Nineteenth street, d. l., 1890.

Virginia avenue.

Four-and-a-half to Sixth street W., No. 63 (B. P. W.).
Seventeenth to Twenty-second street W., No. 400 (B. P. W.).
Twenty-first to Twenty-second street, No. 400 (B. P. W. & C.).
Nineteenth to Twentieth st., No. 744 (B. P. W.).
Ninth street W., No. 854 (B. P. W. & C.).
Eleventh street W., crossing, No. 855 (B. P. W.).
G to Twenty-fourth st. W., No. 73 (Commsr.).
Eleventh to Twelfth st. W., No. 253 (Commsr.).
Tenth to Eleventh st. W., No. 305 (Commsr.).
Sixth to Seventh street W., No. 386 (Commsr.).
Sixth to Seventh street W., No. 449 (Commsr.).
Tenth to Eleventh street W., No. 449 (Commsr.).
B and Eighteenth street W., No. 583 (Commsr.).
Eighteenth to Nineteenth street W., No. 588 (Commsr.).
Twenty-third to Twenty-fourth street, No. 590 (Commsr.).
Nineteenth to Twentieth street W., No. 591 (Commsr.).
Twentieth to Twenty-first street W., No. 589 (Commsr.).
Twenty-second to Twenty-third street W., No. 589 (Commsr.).
Third to Four-and-a-half street W., No. 589 (Commsr.).
Second street to Delaware avenue W., No. 631 (Commsr.).
Eighth to Ninth street E., No. 826 (Commsr.).
Seventh street E. (basin), No. 826 (Commsr.).
I street S. (basin), No. 826 (Commsr.).
Second to Third street W., No. 954 (Commsr.).
Third to Fourth street E., No. 1195 (Commsr.).
South Capitol street to Delaware avenue W., No. 1270 (Commsr.).
Third to Four-and-a-half street W., No. 1468 (Commsr.).
Twenty-first to Twenty-second street W., No. 2085 (Commsr.).
Eleventh to Twelfth street W., d. l., 1880.
Fourth to Sixth street E., north side, d. l., 1878.

Twenty-third to Twenty-fourth street W., north side, d. l. 1879.
 Ninth to Eleventh st. W., south side, d. l. 1889.
 Ninth to Tenth street W., d. l. 1883.
 Sixth to Seventh street E., d. l. 1886.
 Fourth to Fifth street E., d. l. 1888.
 G street N., d. l. 1889.
 Twenty-fourth street W., d. l. 1889.
 Twenty-fifth street W., d. l. 1889.
 E street N., d. l. 1889.
 Second to Third street E., d. l. 1890.
 Sixth to Seventh street E., d. l. 1892, Repl.
 Fifth to Sixth street E., d. l. 1893.
 Twenty-sixth to Twenty-seventh street W., d. l. 1894.
 Four and a half to Sixth st. W., d. l. 1894, Repl.
 Seventh to Eighth street E., d. l. 1895.
 Seventh to Eighth street E., d. l. 1896.
 Twenty-eighth to I street W., d. l. 1897.

Wallace street.

Lansing street, for schoolhouse, d. l. 1896.

Wallach place.

Thirteenth to Fourteenth street, d. l. 1890.

Wallach street.

Thirteenth street to Sherman ave., d. l. 1896.

Waller place.

Twelfth to Thirteenth street, d. l. 1893.

Ward place.

New Hampshire ave. to Twenty-second street, d. l. 1889.
 New Hampshire ave. to Twenty-second street, d. l. 1894.
 New Hampshire ave. to Twenty-second street, d. l. 1897.

Warner street.

Fifth st. to New Jersey ave., No. 593 (Comms.).

Warren street.

B to C street, d. l. 1891.
 B to C street, d. l. 1896.

Washington street.

Fourth to Fifth st. (basins), No. 1171 (Comms.).
 Fourth to Fifth street, south side, d. l. 1884.
 Fourth to Fifth street, d. l. 1885.
 Fourth to Fifth street, north side, d. l. 1882.
 Fourth to Fifth street, d. l. 1889.

Washington street, Anacostia.

Monroe to Fillmore street, d. l. 1894.
 Adams to Taylor street, d. l. 1896.
 Adams to Pierce street, d. l. 1897.
 Fillmore to Pierce street, d. l. 1897.

Washington circle.

K street to New Hampshire avenue, No. 1195 (Comms.).
 Twenty-second to Twenty-third street, south side, d. l. 1883.
 Twenty-third street to Pennsylvania avenue, d. l. 1897, Repl.

Water street.

O street S., crossing, No. 365 (B. P. W.).
 Thirteen and a half to Fourteenth street, No. 728 (Comms.).
 Fourteenth street, crossing, No. 826 (Comms.).
 Fourteenth street, crossing, No. 833 (Comms.).
 Fourteenth to D street, No. 833 (Comms.).
 K street S., crossing, No. 1267 (Comms.).
 Twenty-second to Twenty-third street, No. 2182 (Comms.).
 Tenth to H street W., d. l. 1897.
 Tenth to Eleventh street W., d. l. 1897.

Welling street.

Fourteenth st. to University place, d. l. 1889.

Westminster street.

Ninth to Tenth street, d. l. 1893.

Whitney avenue.

Sherman avenue to Seventh street, No. 2008 (Comms.).
 Fourteenth street to Holmead avenue, No. 2368 (Comms.).
 Seventh st. W., from eastward, d. l. 1895.
 Holmead ave. to Thirteenth st., d. l. 1896.
 Thirteenth to Fourteenth street W., d. l. 1896.
 Seventh street W., east of (basins), d. l. 1896.
 Brightwood avenue, SW. and SE. corners (basins), d. l. 1896.
 Holmead ave. to Fourteenth st. W., d. l. 1897.
 Thirteenth to Fourteenth st. (basins), d. l. 1897.

Wilson street.

Linden to Harewood st., No. 1195 (Comms.).
 Fourth to Sixth street W., No. 1270 (Comms.).
 Third to Fourth street W., d. l. 1892.
 Fifth street, NE. corner (basin), d. l. 1895.

Wiltberger street.

S to T street, d. l. 1890.

Woodley road.

Nineteenth street to Belmont avenue, No. 1797 (Comms.).
 Connecticut avenue to Rock Creek, No. 1799 (Comms.).
 Connecticut to Belmont avenue, No. 2304 (Comms.).
 Connecticut avenue, d. l. 1889.
 Nineteenth street extended (basins), d. l. 1894.
 Twentieth street (basin), d. l. 1894.

Wyoming avenue.

Connecticut avenue to Columbia road, No. 1195 (Comms.).
 Eighteenth to Nineteenth street, d. l. 1890.
 Columbia road to Connecticut ave., d. l. 1896.

Yale street.

Sherman avenue to Thirteenth street, No. 2205 (Comms.).
 Thirteenth to Fourteenth street, d. l. 1895.

Zoological Park.

Intercepting sewer, near first creek, crossing, d. l. 1897.

SQUARES. RESERVATIONS, SUBDIVISIONS, AND MISCELLANEOUS CONTRACTS.

- Square 4, day labor, 1886, 1888, 1889, 1890, 1894 (basins).
 Square 5, day labor, 1885.
 Square 14, day labor, 1892.
 Square 16, day labor, 1886, 1888, 1894 (basin).
 Square 17, day labor, 1888.
 Square 24, day labor, 1894.
 Square 28, day labor, 1884, 1885, 1886, 1889, 1890 (basin), 1890, 1891, 1894 (basin).
 Square 29, day labor, 1886, 1887, 1897.
 Square 37, day labor, 1888, 1892, 1893.
 Square 40, day labor, 1888.
 Square 41, day labor, 1880.
 Square 42, day labor, 1885, 1887.
 Square 43, day labor, 1879, 1891.
 Square 44, day labor, 1886, 1889, 1891.
 Square 49, day labor, 1884.
 Square 50, day labor, 1891, 1895.
 Square 51, day labor, 1890.
 Square 53, day labor, 1890.
 Square 54, day labor, 1886, 1887, 1889, 1890.
 Square 56, day labor, 1887.
 Square 59, day labor, 1885, 1886.
 Square 66, day labor, 1883.
 Square 67, day labor, 1883, 1886, 1887, 1888.
 Square 68, day labor, 1894, 1897, Repl.
 Square 69, day labor, 1882, 1886.
 Square 70, day labor, 1885, 1886, 1889, 1891, 1897.
 Square 73, day labor, 1885, 1891, 1893 (basin), contract No. 280 (B. P. W.).
 Square 74, day labor, 1893.
 Square 76, day labor, 1886, 1890, contract No. 1034 (B. P. W. & C.); No. 5 (Comms.).
 Square 77, contract No. 193 (B. P. W.), day labor, 1889 (basin), 1891, 1892, 1893 (basin).
 Square 78, contract No. 752 (B. P. W.).
 Square 79, day labor, 1887, 1891 (basin), 1897.
 Square 81, day labor, 1893.
 Square 82, day labor, 1887.
 Square 83, day labor, 1894.
 Square 85, day labor, 1876, 1887, 1888.
 Square 86, day labor, 1893.
 Square 90, day labor, 1885.
 Square 91, day labor, 1890, 1891, 1895.
 Square 93, day labor, 1882, 1883, 1891, 1892.
 Square 96, day labor, 1878, 1882, 1891.
 Square 97, day labor, 1888.
 Square 100, day labor, 1888.
 Square 101, day labor, 1889, 1891.
 Square 103, day labor, 1896.
 Square 104, contract No. 744 (B. P. W.).
 Square 104, day labor, 1884, 1885, 1886, 1887, 1888, 1890 (basin).
 Square 105, day labor, 1889 Repl., 1889.
 Square 107, day labor, 1885, 1892.
 Square 110, day labor, 1886, 1887, 1893.
 Square 116, contract No. 487 (B. P. W.): day labor, 1889.
 Square 117, day labor, 1875, 1881, 1888, 1889, 1890, 1891, 1893.
 Square 120, day labor, 1889.
 Square 121, day labor, 1886, 1888.
 Square 126, day labor, 1888, 1892 (basin).
 Square 127, day labor, 1879, 1888, 1890 Repl., 1894.
 Square 131, day labor, 1894.
 Square 132, day labor, 1888, 1890, 1892, 1893, 1896.
 Square 133, day labor, 1878, 1883, 1890, 1891 (basin).
 Square 135, day labor, 1892.
 Square 137, day labor, 1890.
 Square 139, day labor, 1879, 1880, 1881, 1889.
 Square 140, contract No. 723 (B. P. W. & C.): 1797 (Comms.).
 Square 145, day labor, 1887.
 Square 150, day labor, 1883, 1890, 1891.
 Square 151, day labor, 1895, 1896.
 Square 152, day labor, 1891, 1892, 1893, 1895.
 Square 153, day labor, 1893, 1894 sewer and basin, 1895.
 Square 155, day labor, 1883, 1887, 1892, 1895, contract No. 954 (Comms.).
 Square 156, day labor, 1878, 1893.
 Square 157, day labor, 1887, 1888, 1889 (basin), 1890, 1895 (basin), contract No. 1020 (B. P. W.).
 Square 158, day labor, 1888 basin and sewer, 1880, contract No. 1468 (Comms.).
 Square 159, day labor, 1885, 1890, 1893, 1896 (basin), contract No. 723 (B. P. W. & C.).
 Square 160, day labor, 1892.
 Square 161, day labor, 1887, 1889.
 Square 162, day labor, 1881.
 Square 166, day labor, 1890.
 Square 167, day labor, 1890, 1894.
 Square 169, day labor, 1880, contract No. 826 (Comms.).
 Square 170, day labor, 1891.
 Square 172, day labor, 1891, 1893.
 Square 175, day labor, 1892.
 Square 176, day labor, 1890, 1893, 1894.
 Square 177, day labor, 1890 (basin), 1891.
 Square 178, day labor, 1889.
 Square 180, contract No. 878 (B. P. W. & C.).
 Square 181, day labor, 1887, 1888, 1894.
 Square 182, day labor, 1877, 1891, contract No. 589 (Comms.).
 Square 183, day labor, 1889 (basin), contract No. 523 (B. P. W.), 589 (Comms.).
 Square 184, day labor, 1889 basin and Repl., 1890, 1892, 1893.
 Square 185, day labor, 1897.

- Square 190, day labor, 1879.
 Square 191, day labor, 1878, 1879, 1882, 1883, 1893.
 Square 192, day labor, 1890, 1892.
 Square 194, contract No. 1094 (B. P. W. & C.).
 Square 195, day labor, 1885, 1882.
 Square 197, day labor, 1889, 1890, 1893, 1894, 1896.
 Square 198, day labor, 1886, 1890, 1896; contract No. 748 (B. P. W.).
 Square 199, day labor, 1889, 1895.
 Square 204, day labor, 1888, 1892.
 Square 205, day labor, 1891, 1892.
 Square 206, day labor, 1888, 1891.
 Square 207, day labor, 1889, 1896; contract Nos. 844 and 624 (B. P. W.).
 Square 208, day labor, 1887.
 Square 209, contract No. 1094 (B. P. W. & C.).
 Square 210, day labor, 1881, 1889, 1891, 1895 (basin).
 Square 211, day labor, 1891.
 Square 212, day labor, 1880, 1886, 1887.
 Square 214, day labor, 1887, 1889, 1890 (basin), 1895.
 Square 216, day labor, 1886.
 Square 218, day labor, 1888, 1895.
 Square 220, day labor, 1880, 1883, 1892.
 Square 221, day labor, 1883, 1896 (basin), contract No. 217 (B. P. W.).
 Square 222, contract No. 162, (B. P. W.).
 Square 225, contract No. 752 (B. P. W.), 752 (B. P. W. & C.).
 Square 226, day labor, 1887; October 12, 1865 (C. W.).
 Square 231, day labor, 1895.
 Square 234, day labor, 1879, 1894; contract No. 1050 (B. P. W. & C.).
 Square 235, day labor, 1885, 1890, 1893; contract No. 1050 (B. P. W. & C.), 1752 (Commrs.).
 Square 237, day labor, 1885, 1887, 1892, 1894 (basin); contract No. 1098 (B. P. W. & C.).
 Square 238, day labor, 1890, 1891, 1892.
 Square 239, day labor, 1881, 1886; contract No. 930 (B. P. W.).
 Square 240, day labor, 1889 (basin).
 Square 241, day labor, 1881, 1887, 1888.
 Square 242, day labor, 1877, 1893 (basin); 1895, Repl. and basin.
 Square 245, day labor, 1889, 1890; contract No. 835 (B. P. W. & C.).
 Square 247, day labor, 1887, 1888, 1890, 1892, 1895.
 Square 248, contract No. 916 (B. P. W. & C.), 1091 (B. P. W.).
 Square 250, contract No. 949 (B. P. W.); day labor, 1896, July 23, 1852 (C. W.).
 Square 252, day labor, 1893, May 27, 1858.
 Square 253, day labor, 1887.
 Square 254, day labor, 1897; contract No. 713 (B. P. W.); August 26, 1852, May 6, 1854 (C. W.).
 Square 269, day labor, 1890.
 Square 271, day labor, 1886.
 Square 273, day labor, 1887; contract No. 589 (Commrs.).
 Square 274, day labor, 1892; contract No. 593 (Commrs.).
 Square 275, day labor, 1879, 1886, 1893, 1894, 1895 (basin); contract No. 244 (Commrs.).
 Square 276, day labor, 1897; contract No. 770 (B. P. W. & C.).
 Square 277, day labor, 1882.
 Square 278, contract No. 835 (B. P. W. & C.).
 Square 279, day labor, 1891; contract No. 1087 (B. P. W.), 1087 (B. P. W. & C.).
 Square 280, day labor, 1891.
 Square 281, day labor, 1886.
 Square 282, day labor, 1892.
 Square 283, contract No. 878 (B. P. W. & C.).
 Square 284, day labor, 1886, 1893.
 Square 285, day labor, 1890.
 Square 290, day labor, 1889 (basin).
 Square 296, day labor, 1894.
 Square 297, day labor, 1882; contract No. 1468 (Commrs.).
 Square 302, contract No. 1050 (B. P. W. & C.).
 Square 303, contract No. 1050 (B. P. W. & C.).
 Square 304, contract No. 1050 (B. P. W. & C.); day labor, 1893.
 Square 305, contract No. 1050 (B. P. W. & C.); day labor, 1890 (basin).
 Square 307, day labor, 1893.
 Square 309, day labor, 1878, 1887, 1889.
 Square 310, day labor, 1892, 1893.
 Square 312, day labor, 1887; contract No. 835 and 1086 (B. P. W.).
 Square 313, day labor, 1888.
 Square 316, day labor, 1882, 1891, 1897.
 Square 319, contract No. 318 (Commrs.).
 Square 322, day labor, 1888.
 Square 323, day labor, 1889.
 Square 326, day labor, 1889; contract No. 1066 (B. P. W.).
 Square 331, day labor, 1887, 1889.
 Square 332, day labor, 1883, 1886.
 Square 333, contract No. 402 (B. P. W. & C.).
 Square 334, contract No. 954 (Commrs.).
 Square 335, contract No. 5 (Commrs.).
 Square 336, day labor, 1896, Repl.¹
 Square 337, day labor, 1887, 1890, 1897; contracts Nos. 1076 and 1086 (B. P. W.).
 Square 338, contract No. 5 (Commrs.).
 Square 339, contracts Nos. 536 and 688 (B. P. W.) and 5 (Commrs.); day labor, 1888 (Repl.), 1891 (Repl.), 1893 (Repl.).
 Square 340, day labor, 1890, 1893.
 Square 341, day labor, 1892, Repl.¹
 Square 342, day labor, 1888.
 Square 343, day labor, 1894.
 Square 345, day labor, 1889; contract No. 318 (Commrs.), Aug. 21, 1858 (C. W.).

¹ Original sewer constructed under contract with B. P. W.

Square 347, day labor, 1889.
 Square 351, contract No. 589 (Commsrs.).
 Square 354, day labor, 1882.
 Square 355, day labor, 1889.
 Square 357, day labor, 1884, 1885, 1886.
 Square 358, day labor, 1889, 1890.
 Square 359, day labor, 1886, 1887, 1888.
 Square 360, day labor, 1884, 1885.
 Square 361, day labor, 1886, 1888, 1890 (basin and sewer), 1894 (basin).
 Square 362, day labor, 1889, 1894 (basin); contract No. 1270 (Commsrs.).
 Square 363, day labor, 1876, 1877, 1892 Repl.; contract No. 589 (Commsrs.).
 Square 364, day labor, 1888, 1897; contract No. 738 (B. P. W.).
 Square 365, day labor, 1892, Repl.; contract No. 1003 (B. P. W.).
 Square 366, day labor, 1887, 1890 (Repl.), 1890, contract No. 1064 (B. P. W.).
 Square 367, day labor, 1887; contract No. 150½ (B. P. W.).
 Square 368, day labor, 1876, 1885, 1888, 1892; contracts Nos. 1087 (B. P. W.), 835 (B. P. W. & C.).
 Square 369, day labor, 1888, 1889 (basin), 1889, 1892; contract No. 150½ (B. P. W.).
 Square 370, day labor, 1891.
 Square 371, day labor, 1889.
 Square 373, day labor, 1895.
 Square 375, day labor, 1888, 1887, 1897.
 Square 376, day labor, 1882.
 Square 377, day labor, 1886; contract No. 713 (B. P. W.).
 Square 378, day labor, 1879; contracts Nos. 387 (B. P. W.), 89 (Commsrs.).
 Square 379, day labor, 1895; contract No. 137 (Commsrs.).
 Square 380, contract No. 137 (Commsrs.).
 Square 381, contract No. 137 (Commsrs.).
 Square 382, contract No. 137 (Commsrs.).
 Square 383, day labor, 1881, 1884.
 Square 385, day labor, 1879.
 Square 387, day labor, 1883, 1887, 1889; contract No. 808 (B. P. W. & C.).
 Square 388, day labor, 1889, 1891, 1897.
 Square 389, day labor, 1890.
 Square 393, day labor, 1880, 1890.
 Square 395, day labor, 1878, 1893, Repl.; contract No. 770 (B. P. W. & C.).
 Square 397, day labor, 1897; contract No. 835 (B. P. W.).
 Square 398, day labor, 1897; contracts Nos. 835 and 868 (B. P. W.).
 Square 399, day labor, 1887.
 Square 400, contract No. 713 (B. P. W.).
 Square 404, day labor, 1885.
 Square 409, day labor, 1886.
 Square 411, day labor, 1888.
 Square 413, day labor, 1879, 1892.
 Square 416, contract No. 835 (B. P. W. & C.).
 Square 417, day labor 1894, Repl.; contract No. 5 (Commsrs.).
 Square 419, day labor, 1885; contract No. 5 (Commsrs.).
 Square 420, day labor, 1891 Repl.; contract No. 835 (B. P. W.).

Square 421, day labor, 1883; contracts Nos. 1034 (B. P. W. & C.), 835 (B. P. W.).
 Square 422, day labor, 1894 (basin); contracts 835 and 835 Ex. (B. P. W.).
 Square 424, contract No. 592 (B. P. W.).
 Square 425, contract No. 592 (B. P. W.); June 12, 1867, September 20, 1870, March 8, 1871 (C. W.).
 Square 426, day labor, 1879, 1891 (basin).
 Square 429, day labor, 1876.
 Square 431, November 19, 1863 (C. W.).
 Square 432, day labor, 1887.
 Square 435, day labor, 1890, 1891.
 Square 436, day labor, 1889, 1890.
 Square 440, day labor, 1887.
 Square 441, day labor, 1886; contract No. 835 (B. P. W. & C.).
 Square 442, day labor, 1890, 1893; contract No. 835 (B. P. W. & C.).
 Square 444, day labor, 1876, 1887, 1890; contract No. 835 (B. P. W.).
 Square 445, day labor, 1881, 1888 (basin), 1891 (basin and sewer), 1894; contract No. 835 (B. P. W.).
 Square 446, contract No. 835 (B. P. W.).
 Square 447, contract No. 760 (B. P. W. & C.).
 Square 448, contract No. 466 (B. P. W.); day labor, 1888, 1892; contract No. 5 (Commsrs.); January 4, 1871 (C. W.).
 Square 449, contract No. 592 (B. P. W.); day labor, 1887.
 Square 452, day labor, 1890, 1893 (basin); September 23, 1864.
 Square 453, day labor, 1878, 1887, 1893, 1894.
 Square 454, day labor, 1892, Repl.; contract No. 821 (B. P. W.).
 Square 455, November 4, 1865 (C. W.).
 Square 456, July 21, 1858; July 28, 1866 (C. W.).
 Square 457, October 26, 1865; April 27, 1866 (C. W.).
 Square 461, day labor, 1889 (basin); contract no No., in 1874.
 Square 462, day labor, 1896; contract No. 557 (B. P. W.).
 Square 463, day labor, 1886; contract No. 557 (B. P. W.).
 Square 465, day labor, 1890; contract No. 907 (B. P. W.).
 Square 467, day labor, 1883; contract Nos. 539 and 1063 (B. P. W.).
 Square 468, day labor, 1888, 1892, 1896.
 Square 469, day labor, 1892, 1889.
 Square 470, day labor, 1888, 1893 (basin).
 Square 472, day labor, 1889, 1890.
 Square 475, day labor, 1876, 1885, 1890 (basin), 1894 (basin).
 Square 480, contract No. 1034 (B. P. W. & C.).
 Square 482, day labor, 1891.
 Square 484, contract No. 913 (B. P. W.).
 Square 488, January 4, 1866 (C. W.).
 Square 490, day labor, 1892, 1894, 1895; September 30, 1864 (C. W.).

- Square 491, day labor, 1893 (basin and sewer), 1894; contract No. 1566 (Comms.).
- Square 492, contract No. 557 (B. P. W.).
- Square 493, contract No. 1468 (Comms.).
- Square 496, contract No. 837 (B. P. W.).
- Square 497, day labor, 1892, 1893 (basin), 1896.
- Square 498, day labor, 1889 (basin), 1890, 1891.
- Square 500, day labor, 1893.
- Square 501, day labor, 1888.
- Square 502, day labor, 1887, 1888, 1891, 1893.
- Square 503, day labor, 1886, 1887, 1888, 1891, 1892, 1893.
- Square 504, day labor, 1880.
- Square 507, day labor, 1886, 1888.
- Square 508, day labor, 1878.
- Square 509, day labor, 1878, 1885; contract No. 1034 (B. P. W. & C.).
- Square 510, day labor, 1876, 1884, 1885, 1888, 1896; contracts Nos. 760 (B. P. W. & C.), 30 (Comms.).
- Square 511, day labor, 1880, 1885, 1888, 1889, 1891; contract No. 582 (B. P. W.).
- Square 512, day labor, 1881, 1888, 1889.
- Square 513, day labor, 1887.
- Square 514, May 27, 1867 (C. W.).
- Square 515, May 19, 1871 (C. W.); contracts Nos. 950, 1064, and 1065 (B. P. W.); day labor, 1882, 1885, 1892, 1893, 1895.
- Square 516, day labor, 1882, 1886, 1892 (basin), 1894 Repl., 1894; March 20, 1865 (C. W.); July 8, 1865 (C. W.).
- Square 517, day labor, 1877, 1878, 1879, 1890, 1891; contract No. 240 (Comms.).
- Square 518, day labor, 1885, 1889, 1890, 1891, 1895; contract No. 317 (Comms.); July 21, 1866 (C. W.).
- Square 519, day labor, 1885.
- Square 520, day labor, 1886, 1894, 1895, 1897.
- Square 521, day labor, 1888.
- Square 528, contract No. 353 (B. P. W.); May, 19, 1871 (C. W.).
- Square 529, day labor, 1892, 1893.
- Square 530, day labor, 1885.
- Square 532. See Indiana avenue.
- Square 533, July 17, 1855 (C. W.).
- Square 534, day labor, 1885, 1887, 1888, 1892, 1894.
- Square 535, day labor, 1890, 1893.
- Square 538, day labor, 1889.
- Square 539, day labor, 1892, 1893.
- Square 540, day labor, 1887, 1888, 1893; contract No. 202 (B. P. W.).
- Square 541, day labor, 1886, 1890.
- Square 542, day labor, 1894, 1896.
- Square 543, day labor, 1890.
- Square 544, day labor, 1888, 1890, 1891.
- Square 545, day labor, 1893.
- Square 546, day labor, 1886, 1887, 1893, 1894.
- Square 551, day labor, 1889, 1891, 1892.
- Square 553, day labor, 1890, 1891, 1892; contracts Nos. 831 (B. P. W.), 1468 (Comms.).
- Square 554, day labor, 1889, 1890.
- Square 555, day labor, 1893; contract No. 1723 (Comms.).
- Square 557, day labor, 1886, 1887, 1888, 1889, 1891, 1892, 1896, 1897.
- Square 559, day labor, 1886, 1889.
- Square 560, day labor, 1877.
- Square 561, day labor, 1886; contract No. 881 (B. P. W.).
- Square 562, May 19, 1871 (C. W.).
- Square 564, day labor, 1887, 1891, 1892.
- Square 565, day labor, 1877.
- Square 566, day labor, 1890, 1891.
- Square 567, day labor, 1886, 1890, 1891.
- Square 568, day labor, 1893; contract No. 919 (B. P. W.).
- Square 569, day labor, 1886, 1889, 1890.
- Square 570, day labor, 1890, 1891.
- Square 571, day labor, 1892.
- Square 575, day labor, 1895; contract No. 384 (B. P. W.).
- Square 577, day labor, 1885, 1887.
- Square 579, day labor, 1890.
- Square 581, day labor, 1893.
- Square 582, contract No. 1468 (Comms.).
- Square 583, day labor, 1888.
- Square 584, contract No. 589 (Comms.).
- Square 585, day labor, 1890, 1892.
- Square 586, day labor, 1887, 1888; contract No. 702 (B. P. W. & C.).
- Square 587, day labor, 1891; contract No. 1468 (Comms.).
- Square 588, day labor, 1889, 1894.
- Square 589, day labor, 1890, 1894.
- Square 592, day labor, 1894.
- Square 595, day labor, 1892.
- Square 597, day labor, 1886.
- Square 615, day labor, 1889, 1893; contract No. 1716 (Comms.).
- Square 616, day labor, 1889, 1894.
- Square 617, day labor, 1892, 1897; contract No. 831 (B. P. W. & C.).
- Square 618, day labor, 1890, 1891.
- Square 619, day labor, 1893.
- Square 620, day labor, 1886, 1889, 1890, 1891, 1893, 1895; contract No. 631 (Comms.).
- Square 621, day labor, 1886, 1887, 1888, 1889, 1890, 1891.
- Square 622, day labor, 1892, 1893.
- Square 623, day labor, 1890 Repl.; 1896, Repl.¹
- Square 624, day labor, 1887, 1892, 1896; contracts Nos. 821 (B. P. W.), 730 (Comms.).
- Square 625, day labor, 1881; contract No. 760 (B. P. W.).
- Square 626, day labor, 1880.
- Square 628, day labor, 1883, 1884, 1887, 1889, 1893; contracts Nos. 803, 1054 (B. P. W.), 819 (B. P. W. & C.).
- Square 630, day labor, 1890, 1891, Repl.; contracts Nos. 760, 958 (B. P. W.).

¹Original sewer built by property owners.

- Square 633, day labor, 1887, 1888, 1889, 1892, 1894.
 Square 634, day labor, 1876; contract No. 589 (Comms.).
 Square 635, day labor, 1885, 1891.
 Square 638, day labor, 1886, 1888.
 Square 640, day labor, 1887, 1889, 1891.
 Square 642, day labor, 1890.
 Square 643, day labor, 1891.
 Square 645, day labor, 1896.
 Square 647, day labor, 1893.
 Square 650, day labor, 1895.
 Square 668, day labor, 1889, 1893.
 Square 669, day labor, 1886, 1892, 1893, 1894.
 Square 672, day labor, 1891.
 Square 673, contract No. 836 (B. P. W. & C.).
 Square 674, day labor, 1885, 1886, 1887, 1888, 1890, 1892.
 Square 675, contracts Nos. 819 (B. P. W. & C.); 730 (Comms.).
 Square 676, contracts Nos. 819 (B. P. W. & C.); 82 (Comms.); 1880, 1888, 1890, 1893, day labor.
 Square 677, day labor, 1881, 1886, 1888, 1887, 1895 Repl.; contracts Nos. 819 (B. P. W. & C.); 51 (Comms.); August 26, 1860 (C. W.).
 Square 678, day labor, 1884.
 Square 680, contract No. 570 (B. P. W.).
 Square 686, day labor, 1888, 1889, 1890; contracts Nos. 243, 961, 828 (B. P. W.).
 Square 690, contract No. 88 (B. P. W.).
 Square 692, day labor, 1879.
 Square 693, day labor, 1889, 1894; contract No. 712 (B. P. W.).
 Square 697, day labor, 1888, 1889.
 Square 701, day labor, 1893, 1894.
 Square 702, day labor, 1889, 1890.
 Square 710, contract No. 836 (B. P. W. & C.).
 Square 711, contract No. 836 (B. P. W. & C.), 2008 (Comms.).
 Square 716, day labor, 1887.
 Square 719, day labor, 1891, 1893, 1895.
 Square 720, day labor, 1890, 1893.
 Square 721, day labor, 1890, 1891, 1895.
 Square 724, day labor, 1894.
 Square 725, day labor, 1887, 1890, 1891.
 Square 726, day labor, 1888.
 Square 727, day labor, 1893, 1894; contract by verbal order, 1875.
 Square 728, contract No. 1088 (B. P. W.).
 Square 729, contract No. 653 (B. P. W.).
 Square 731, day labor, 1887.
 Square 732, day labor, 1886, 1890.
 Square 733, day labor, 1886, 1887, 1896.
 Square 734, day labor, 1894.
 Square 735, day labor, 1893, 1896; contract No. 1715 (Comms.).
 Square 736, day labor, 1892, 1896, 1897.
 Square 737, day labor, 1885, 1893.
 Square 740, contract No. 1270 (Comms.).
 Square 743, day labor, 1894.
 Square 744, day labor, 1890.
 Square 748, day labor, 1895.
 Square 749, day labor, 1889, 1891, 1893, 1895.
 Square 750, day labor, 1894.
 Square 751, day labor, 1879.
 Square 753, day labor, 1886, 1887, 1888, 1893, 1893 Repl.
 Square 754, day labor, 1892, 1895.
 Square 756, day labor, 1886, 1897.
 Square 759, day labor, 1889, 1890.
 Square 760, day labor, 1886.
 Square 761, day labor, 1881, 1885, 1892.
 Square 762, day labor, 1888.
 Square 763, day labor, 1893; contract No. 843 (B. P. W.).
 Square 767, day labor, 1893.
 Square 774, day labor, 1892, 1893, 1895, 1896.
 Square 775, day labor, 1897.
 Square 776, day labor, 1893, 1896.
 Square 777, day labor, 1894.
 Square 778, day labor, 1892, 1893; contract No. 702 (B. P. W.).
 Square 779, day labor, 1890, 1891, 1893.
 Square 780, day labor, 1892.
 Square 784, day labor, 1877.
 Square 785, day labor, 1889, 1892; contract No. 811 (B. P. W. & C.).
 Square 786, contract No. 811 (B. P. W. & C.).
 Square 787, day labor, 1896 (basin).
 Square 788, day labor, 1886, 1890.
 Square 794, day labor, 1893.
 Square 797, day labor, 1876, 1892.
 Square 799, day labor, 1893.
 Square 801, day labor, 1889, 1892.
 Square 802, day labor, 1885.
 Square 805, day labor, 1887, 1889.
 Square 808, contract No. 631 (Comms.).
 Square 809, day labor, 1886, 1890, 1893.
 Square 810, contract No. 702 (B. P. W.).
 Square 812, day labor, 1888.
 Square 816, day labor, 1893.
 Square 824, day labor, 1890.
 Square 825, day labor, 1892, 1893.
 Square 829, day labor, 1891; contracts Nos. 589, 593 (Comms.).
 Square 834, contract No. 702 (B. P. W.).
 Square 835, day labor, 1890.
 Square 836, day labor, 1892.
 Square 838, day labor, 1884, 1887.
 Square 841, day labor, 1891.
 Square 844, day labor, 1892.
 Square 845, day labor, 1886.
 Square 855, day labor, 1894.
 Square 856, day labor, 1889, 1891, 1894; contract No. 702 (B. P. W. & C.).
 Square 857, day labor, 1889, 1890.
 Square 858, day labor, 1887, 1890, 1891.
 Square 859, day labor, 1887, 1889, 1890; contract No. 702 (B. P. W. & C.); 1896, 1897.
 Square 860, day labor, 1893, 1897; contract No. 715 (Comms.).
 Square 861, day labor, 1890, 1891, 1892, 1893.
 Square 863, day labor, 1892.
 Square 865, day labor, 1887.
 Square 866, day labor, 1883, 1886.
 Square 867, day labor, 1887, 1892.
 Square 868, day labor, 1888; contract No. 898 (Comms.).

- Square 869, day labor, 1888, 1889 Repl.
 Square 870, day labor, 1877, 1890, 1891.
 Square 873, day labor, 1886, 1888, 1889.
 Square 877, day labor, 1888, 1889.
 Square 878, day labor, 1887, 1891, 1892.
 Square 886, day labor, 1895.
 Square 887, day labor, 1895.
 Square 889, contract No. 1097 (B. P. W.).
 Square 890, contract No. 1892; contract No. 1034 (B. P. W. & C.).
 Square 894, day labor, 1897.
 Square 895, day labor, 1891, 1893.
 Square 899, day labor, 1891.
 Square 900, day labor, 1891, 1894; contract No. 835 (B. P. W. & C.).
 Square 904, day labor, 1876; contract No. 1072 (B. P. W.).
 Square 907, day labor, 1892.
 Square 910, day labor, 1887.
 Square 912, day labor, 1893, 1895.
 Square 913, day labor, 1882, 1883, 1889; contract No. 954 (Commrs.).
 Square 915, day labor, 1880, 1888, 1890, 1892.
 Square 917, day labor, 1889, 1890, 1892.
 Square 919, day labor, 1881, 1882.
 Square 922, day labor, 1886.
 Square 925, day labor, 1888, 1892.
 Square 926, day labor, 1886.
 Square 933, day labor, 1876; contract No. 6 (Commrs.).
 Square 934, day labor, 1876, 1893.
 Square 936, day labor, 1891, 1892.
 Square 942, day labor, 1884, 1896.
 Square 943, day labor, 1887, 1891, 1892, 1893.
 Square 944, day labor, 1877.
 Square 950, day labor, 1890, 1891, 1892, 1896.
 Square 958, day labor, 1884.
 Square 960, day labor, 1890, 1893.
 Square 963, day labor, 1891.
 Square 969, day labor, 1885.
 Square 970, day labor, 1889.
 Square 980, day labor, 1892.
 Square 981, day labor, 1891; contract No. 1270 (Commrs.).
 Square 983, day labor, 1892.
 Square 987, day labor, 1878; contract No. 589 (Commrs.).
 Square 988, day labor, 1893, 1894.
 Square 990, day labor, 1890, 1893.
 Square 991, day labor, 1890.
 Square 992, day labor, 1886, 1891.
 Square 995, day labor, 1897.
 Square 996, day labor, 1886, 1891; contract No. 1270 (Commrs.).
 Square 997, day labor, 1892.
 Square 1000, day labor, 1892.
 Square 1001, day labor, 1896.
 Square 1003, day labor, 1886, 1887.
 Square 1004, day labor, 1887; contract No. 1270 (Commrs.).
 Square 1005, day labor, 1889, 1893.
 Square 1008, day labor, 1892; contract No. 1468 (Commrs.).
 Square 1012, day labor, 1891, 1892.
 Square 1013, day labor, 1896.
 Square 1015, day labor, 1893.
 Square 1018, day labor, 1890.
 Square 1020, day labor, 1887, 1889, 1896.
 Square 1023, day labor, 1887, 1892, 1893.
 Square 1026, day labor, 1883, 1897; contract No. 449 (Commrs.).
 Square 1027, day labor, 1889, 1891, 1892, 1893, 1894.
 Square 1028, day labor, 1890.
 Square 1029, day labor, 1893; contract No. 1715 (Commrs.).
 Square 1033, day labor, 1891.
 Square 1039, day labor, 1897.
 Square 1041, day labor, 1896.
 Square 1042, day labor, 1894, 1897.
 Square 1049, day labor, 1887.
 Square 1051, day labor, 1892.
 Square 1052, day labor, 1893, 1895.
 Square 1055, day labor, 1897.
 Square 1155, day labor, 1888.
 Square 1184, day labor, 1894.
 Square 1186, day labor, 1892.
 Square 1188, day labor, 1890, 1891, 1892.
 Square 1189, day labor, 1896.
 Square 1190, contract No. 860 (B. P. W.).
 Square 1192, day labor, 1887.
 Square 1198, day labor, 1895.
 Square 1199, day labor, 1894, 1896.
 Square 1207, day labor, 1897; contract No. 586 (Commrs.).
 Square 1208, day labor, 1879, 1895, 1896.
 Square 1210, day labor, 1888.
 Square 1211, day labor, 1880.
 Square 1214, day labor, 1886.
 Square 1215, day labor, 1892.
 Square 1219, contract No. 586 (Commrs.).
 Square 1221, day labor, 1886.
 Square 1223, day labor, 1885.
 Square 1227, day labor, 1891.
 Square 1229, day labor, 1896; contract No. 586 (Commrs.).
 Square 1230, contract No. 586 (Commrs.).
 Square 1231, contract No. 1034 (B. P. W. & C.).
 Square 1232, contract No. 1034 (B. P. W. & C.).
 Square 1239, day labor, 1894 Repl.¹
 Square 1244, day labor, 1886.
 Square 1245, day labor, 1892.
 Square 1246, day labor, 1876.
 Square 1248, day labor, 1890.
 Square 1254, day labor, 1889.
 Square 1255, day labor, 1888; contract No. 5 (Commrs.).
 Square 1265, day labor, 1892.
 Square 1269, contract No. 5 (Commrs.).
 Square 1272, contract No. 5 (Commrs.).
 Square 1282, day labor, 1877, 1893, 1895; contract No. 1723 (Commrs.).
 Square 1308, contract No. 1593, (Commrs.).
 Square 1304, day labor, 1888.

¹ Original sewer constructed under contract with B. P. W.

- Anacostia*.—Alley between Jefferson and Pleasant, Fillmore and Nichols, day labor, 1894; alley rear of Valley street, between Pierce and High, day labor, 1897.
- Anacostia, Clchester's addition to*.—Lot 5, day labor, 1890.
- Burleith*.—South of U street, day labor, 1888.
- Bloomington*.—Block 8, day labor, 1896.
- Columbian College addition*.—Block 1, day labor, 1886 and 1889; block 38, day labor, 1892.
- Connecticut Avenue Heights*.—Block 2, day labor, 1895; block 3, day labor, 1895.
- Dent's addition*.—Day labor, 1893.
- Fifteenth and Sixteenth streets, Massachusetts and Rhode Island avenues*.—Street between, day labor, 1891.
- F street and Easbys Point intercepting sewer*.—Potomac River to Fifteenth street and Pennsylvania avenue, contract No. 1794 (Comms.); Fifteenth street and Pennsylvania avenue to Seventh and F streets, contract No. 2328 (Commrs.).
- Howard University addition*.—Block 2, day labor, 1891, 1892; block 19, day labor, 1894.
- Ingleside Terrace*.—Block 4, day labor, 1897.
- Kalorama Heights*.—Block 7, day labor, 1892.
- Le Droit Park*.—Block 3, day labor, 1890, 1891, 1892; block 1, day labor, 1892; block 5, day labor, 1893; block 10, day labor, 1894.
- Long Meadows*.—Block 27, day labor, 1893; block 28, day labor, 1893; block 29, day labor, 1892; block 30, day labor, 1894.
- Petworth*.—Block 31, day labor, 1894.
- Petworth, West*.—Alley between Richmond and Savannah, Minnesota avenue and Seventh street, contract No. 2387 (Comms.).
- Public space*.—Tenth to Georgia avenue SE., day labor, 1896.
- Reno*.—Block 10, day labor, 1895; block 11, day labor, 1895.
- Reservation No. 2*.—Contract No. 316 (Comms.).
- Reservation No. 10*.—August 4, 1865 (C. W.), day labor, 1886, 1888, 1890.
- Reservation No. 11*.—May 3, 1866 (C. W.); day labor, 1895.
- Reservation No. 13*.—Workhouse, day labor, 1879.
- Reservation No. 15*.—Contract No. 1287 (Commrs.); day labor, 1895.
- Reservation No. 16*.—Day labor, 1895.
- Reservation No. 55*.—Contract No. 1900 (Commrs.).
- Rosedale*.—Block 27, day labor, 1894; block 30, day labor, 1897.
- Square A*.—Day labor, 1890, May 18, 1866 (C. W.).
- Square B*.—Day labor, 1892, 1892 Repl.; May 12, 1839.
- Square C*.—Day labor, 1888.
- Square D*.—Contracts Nos. 1909, 1916 (Comms.).
- Tenleytown road*.—Schoolhouse, drain for, day labor, 1896.
- Trinidad*.—Block 1, contract No. 1468 (Comms.); day labor, 1894; block 2, contract Nos. 1387, 1473 (Comms.); day labor, 1891, 1893; Block 3, contract Nos. 1387, 1797 (Commrs.); day labor, 1894, 1896; block 6, day labor, 1894; block 7, day labor, 1894; alley in King's addition, day labor, 1896, 1897; from Bladensburg road, across Long Meadows, and north on Trinidad street to King street, contract No. 1806 (Commrs.).
- Washington Heights*.—Block 7, day labor, 1894; block 30, day labor, 1894.
- Weems, Mrs. R. A. D., across lands of*.—Between Piney Branch road and Seventh street, contract No. 2218 (Commrs.).
- White House grounds*.—Contract No. 177 (Commrs.).
- Sewer between Ninth and Tenth streets from B street northward*.—Pennsylvania avenue, from Ninth to Tenth street, October 20, 1810, May 9, 1811 (C. W.); F street, between Ninth and Tenth streets, July 26, 1815 (C. W.); E street, between Ninth and Tenth streets, October 9, 1817 (C. W.); C street, between Ninth and Tenth streets, July 11, 1820, April 5, 1821, July 11, 1821; D street, between Ninth and Tenth streets, September 3, 1827, March 25, 1828 (C. W.); C, D, E, F, and G streets, between Ninth and Tenth streets, September 4, 1840 (C. W.); E street, between Ninth and Tenth streets, April 17, 1845 (C. W.), and May 29, 1845, October 23, 1847, Oct. 16, 1850 (C. W.); Louisiana avenue, between Ninth and Tenth streets, May 8, 1845 (C. W.), May 6, 1846; F street, between Ninth and Tenth streets, December 21, 1847 (C. W.); Pennsylvania avenue, between Ninth and Tenth streets, November 12, 1849; Tenth street, from G to I streets, August 8, 1851.
- Miscellaneous contracts*.—Clean, repair, and build manholes, contract No. 878 (B. P. W. & C.); construct steam pump, contract No. 190 (Commrs.); dredge James Creek Canal, contract No. 383 (Commrs.); construct receiving basins, contract No. 580 (Commrs.); construct receiving basins, contract No. 592 (Commrs.).

REPORT OF THE INSPECTOR OF PLUMBING.

WASHINGTON, August 26, 1897.

DEAR SIR: The operations of the division of plumbing inspection during the fiscal year ended June 30, 1897, show a marked increase in the number of inspections over those made in any previous year, the total being 14,113 recorded inspections, the details of which comprise 3,315 examinations of existing plumbing, 2,817 inspections of work in new buildings; 6,226 inspections of remodeling, extensions, or repairs to plumbing; 313 peppermint tests of piping systems, 671 inspections of gas piping or fixtures, and 771 inspections of lead water services. The total for the preceding year was 8,677, a difference of 5,436.

This increase is due to four principal causes: The introduction, through the operation of the compulsory act, of house sewers and water supplies into many premises heretofore unserved; the greater facility of movement afforded the assistant inspectors by their equipment with bicycles; the increase of one-sixth in the force of assistants; and an added attention to the fullness of the record of inspections made.

The act of Congress, approved May 18, 1896, compelling the connection of undrained and unsewered premises with the sewer system, and the substitution of water-closets for privies, has resulted in the service of nearly 1,700 notices by the health officer, of which it is believed at least 1,000 have now been complied with. Each of these cases has required two or more inspections.

In July, 1896, two additions were made to the corps of assistants. John J. Ryan was appointed to the position of assistant inspector of gas fitting, made vacant by promoting Richard A. O'Brien to the vacancy caused by the death of John F. Murphy, and John J. Daly was appointed to the additional inspectorship provided by the appropriation act. Both of these gentlemen were appointed after due certification by the United States Civil Service Commission as having attained the requisite proficiency in competitive examinations for their respective positions, and both have shown aptitude and zeal in discharging the duties assigned to them. With this added force it has been found practicable to detail Assistant O'Brien to urgency inspection service and office duty, with a resulting increase of efficiency in both of these directions, especially in the completeness of the record of inspections and decisions.

The examination and approval of plans and specifications of the plumbing systems for new buildings has been conducted as heretofore, the total number considered having decreased from 964 in the previous year to 721 for the year just passed. The present record includes six apartment buildings, which in the arrangement and completeness of their plumbing compare favorably with that class of structures erected elsewhere. Especial attention has been directed to securing an advance upon the current practice regarding location and directness of run of soil lines, and with good results.

It is my conviction that frame bathrooms should not be authorized, as at present, to be added to brick dwellings, for the reason that it is impracticable to adequately protect the waste and supply lines located in such supplementary structures against the effects of frost and the settlement of walls and floors.

The number of two-story houses in which the use of 3-inch soil stacks has been authorized in the past six months is 50, a number sufficient to show that the apprehension of stoppage which was felt by plumbers upon their introduction no longer exists. I am not informed that a single case of obstruction has resulted from the use of the smaller size as now designed. The advantages gained, as stated in the last annual report, consist in greater ease of construction within a 4-inch partition, a more thorough flushing at each discharge of the closet, and a decrease of nearly one-half in the fouled surface. It is believed that the greater security attained by the substitution of galvanized wrought-iron pipe with recessed-threaded fittings for the common cast-iron soil stacks of small size will justify the slight increase in the cost of the material.

The understanding had with the inspector of buildings relative to the advance approval of plumbing plans for repairs and reconstruction of buildings has now been brought into a permanent and recognized form by requirements made in the new building regulations.

By the coincidence of three conditions, viz. a new main sewer system, recent house plumbing, and isolation of dwellings from each other, attending the introduction of sewerage into the Eckington Valley and Brookland drainage area, an opportunity was afforded for the safe omission of running traps from the house sewers of this district. The Commissioners, upon consideration of the facts,

ordered that traps be not required within the limits specified, an exception which, it is hoped, may in the future be applied to certain other watersheds.

The third edition of the plumbing regulations, which includes eighteen changes not heretofore published, was available for distribution on May 1. Most of the amendments are minor ones, intended to adjust the requirements more nearly to the office practice, but certain of the more important are worthy of mention. It is now provided that all exterior stopcocks on water service lines are to be supplied by the water department; that all tapping of main sewers, whether the material be of brick or vitrified pipe, shall be done by an employee of the District and not by the plumbers; that the back vent from a water-closet trap may be omitted if the fixture is the upper or only closet on the stack and has its center within 2 feet of the center of the stack; that water services be laid to specified depths, and that a terra cotta fresh-air inlet pipe shall be terminated at the ground level with cast iron.

It has frequently come to my notice that many well-informed citizens have no knowledge of the willingness of this office to render assistance without charge to such as desire to determine whether the plumbing work in their homes is in safe condition or otherwise. Indeed, many who understand, in a vague way, the dangers arising through the admission of sewer air to their dwellings fail, either through apathy or the fear of expense, to obtain any assurance that their own persons and families are protected against this insidious foe. In 1895 Mr. Reuben S. Bemis, inspector of plumbing for Providence, R. I., addressed to householders a circular inviting their attention, by a series of questions, to the importance of the systematic inspection of the different portions of the house plumbing. A similar set of queries was inserted by Andrew Young, the well-known chief inspector of plumbing of Chicago, into his report for last year. I suggest the desirability of following these precedents by issuing a carefully prepared circular letter, so phrased as not to excite undue alarm in overcautious minds, but indicating where common defects in old plumbing may be looked for and the nature of such defects, as well as the readiness of this bureau to afford expert service by advice or examination, and tendering its free cooperation in making tests of house plumbing.

Some study was given, during the winter of 1894-95, to determining the best practical method of obviating the dangers of accidental asphyxiation through the escape of illuminating gas due to defects in old fixtures and pipes, and that investigation has been continued during the period covered by this report. An opinion was expressed by the coroner in January, 1895, that deaths which took place about that time at No. 922 G street SW. and No. 33 H street NE. were "due entirely to defective gas fixtures." He at that time recommended that a thorough "inspection of all buildings, especially sleeping apartments therein, be made relative to the condition of gas fixtures therein." Two similar instances were brought to public notice during this year. The death of Mr. Warren McCoy, at No. 906 I street NW., on December 28, 1896, and that of Louis B. Butler, on January 5, 1897, at the American House, appear to have been directly caused by the accidental opening of seriously defective gas keys.

In February, 1897, a list of the principal hotels and boarding houses was collated and forwarded to the Commissioners with a request that it be determined if authority existed to make inspection of the gas appliances in these buildings. The opinion rendered by the attorney was an adverse one, and no further action was taken. I consider that the conditions justify the enactment of a statute allowing the entrance of my assistants for such examination, and compelling repairs after due service of notice.

That this subject is deemed of pressing importance in other municipalities is evidenced by the report made to the Massachusetts legislature by the board of gas and electric light commissioners of the city of Boston on February 20, 1897. The report states that four propositions have been considered by the board: "First, to require the use in the sleeping rooms of hotels and lodging houses of some kind of burner from which the gas can not escape except when lighted; second, to prohibit the use of gas in sleeping rooms which contain less than a definite number of cubic feet; third, to provide for the systematic inspection of gas fixtures and piping by some duly authorized public officer; fourth, to define by statute the amount of carbonic oxide or other ingredient which may exist in the gas, and to prohibit the distribution of gas containing an excess of such ingredients."

The apparent conclusion reached by this board respecting the third method is that the number of fixtures (estimated at 1,200,000 burners in the city of Boston) is prohibitory of the proposed inspection. I do not agree with this conclusion, but consider it entirely feasible to make periodic inspections of the condition of a very large number of gas fixtures if the requisite authorization can be secured.

In addition to the current inspection and office work, there was undertaken and

completed an examination of the plumbing in all the buildings occupied for school purposes in the District, including those rented as well as those owned. The general condition of the plumbing in a majority of the buildings was found to be good, but in some of the older schools and rented buildings extensive repairs and replacements should be made. The terra-cotta or brick drains should in all cases be replaced with cast iron, and many old fixtures with inadequate vent lines should be overhauled or displaced. Only a limited number of the buildings are provided with suitable separate toilet facilities for the teachers.

The notes taken have been tabulated and placed at the disposal of the official in charge of repairs to schoolhouses, and will afford him a basis for estimating the cost of the renewals and repairs necessary. To maintain a proper standard of safety in school plumbing it should be periodically examined and tested by an expert, and it is hoped that a system for such examination may be devised and kept in force.

In connection with my consideration of the best type of school plumbing appurtenances I was enabled to visit public school buildings in the city of Philadelphia, most of which were of recent construction. The main closets for some of these buildings consist of vaults placed in a yard in apartments unprovided with means of heating, an arrangement not at all in keeping with the otherwise fine appointments of these excellent schoolhouses. The plumbing facilities for the use of teachers are of high grade, and well protected within the buildings.

Two inclosures are transmitted herewith. One of these is a list of licensed plumbers at this date. The second is a drawing of a typical section of a system of house plumbing, delineated by Mr. Charles D. Cole, of the water department, and illustrating the application of the requirements of the plumbing regulations to the various parts of a house design.

Respectfully submitted.

CHAS. B. BALL, *Inspector of Plumbing.*

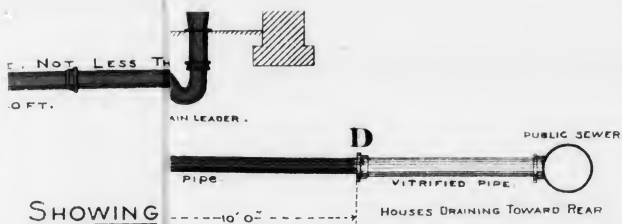
Capt. W. M. BLACK,

Engineer Commissioner of the District of Columbia.

(Through Capt. Lansing H. Beach, Assistant to Engineer Commissioner.)

List of licensed plumbers.

Names.	Addresses.	Names.	Addresses.
Albinson, James E.....	1812 Fourteenth street NW.	Carroll, Jas. O.....	707 Thirteenth street SE.
Allen & Van Horn.....	1127 Fifteenth street NW.	Caverly, Edw. & Co.....	1216 F street NW.
Anadale, J. A.....	1234 Ninth street NW.	Caverly, Robert B.....	918 F street NW.
Anderson, Jas. F.....	304 B street SE.	Clarke, James B.....	716 Eighth street NE.
Artz, Samuel.....	3007 M street NW.	Clark, Thos. C.....	1220 Fifth street NW.
Ashton, Geo. W.....	702 E street SW.	Connor Bros.....	1542 Ninth street NW.
Atchison, Jul. I.....	1316 Fourteenth street NW.	Craemer, J. A. & Bro.....	1922 Fourteenth street NW.
Barnard, Edw.....	807 Eighteenth street NW.	Cunningham, Jas.....	1408 Pennsylvania avenue NW.
Barrick, Chas. E.....	214 Thirteen-and-a-half street SW.	Conradis, Wm.....	712 M street NW.
Baur, Jos. A.....	931 Fifth street NE.	Craven, Jno. F.....	1905 Seventeenth street NW.
Beuchler, R. A.....	605 Thirteenth street NW.	Daly, Frank & Co.....	638 G street NW.
Betker, Jno. A.....	2104 Vermont avenue NW.	Daly, Peter.....	419 Third street NW.
Beuter, Max. A.....	606 D street NW.	Davis & Kibbey.....	404 R street NE.
Blake, Wm. A.....	624 North Capitol street NW.	Dent, A. S.....	816 Nineteenth street NW.
Bond, Jos. A.....	117 Pennsylvania avenue NW.	Dessez, Chas. E.....	811 Twenty-second street NW.
Bontz & Stutz.....	1100 Q street NW.	Dougherty, W. W.....	488 Louisiana avenue NW.
Bouis, Wm. R.....	505 Eleventh street NW.	Donaldson, T. S.....	716 Sixth street SW.
Bounds, O. F.....	Camden Station, Md.	Dorsett, Chas. A.....	1110 Park place NE.
Brill & Hayden.....	308 Pennsylvania avenue NW.	Duffy, Wm.....	1130 North Capitol street.
Brooks, Ruf. C.....	618 D street NW.	Enright & Newmeyer.....	228 O street NW.
Brown, Thos.....	618 D street SW.	Fingles, P. J.....	620 Fourteenth street NW.
Busey, Walter.....	1214 Second street NW.	Fitzgerald, Richd.....	26 G street NW.
Campbell, Wm. P.....	437 Tenth street SW.	Flack, Wm. P.....	505 H street NE.
Campbell, Robt. G.....	517 Tenth street NW.	Fowler & McCarthy.....	2348 Brightwood avenue NW.
Campbell, G. G.....	Do.	French & Bennett.....	2008 I street NW.
Carmody, John.....	1241 Sixth street SW.	Gaghan, Jno.....	717 Eleventh street NW.



DISTR

DC 55 2

OUTSIDE PLUMBING.

PERMIT Give location of building, No. of lot and square, frontage, and depth of lot, draining front or rear; iron or vitrified pipe and time when the tap is required.

Houses draining toward front to have cast iron or wrought metal house sewer throughout.

(Connection with pipe sewer 10" or less in dia. will be made by fitting out length and substituting Y branch.)

(Connection with pipe sewer 12" or more where house sewer is of iron will be made by cutting hole of smallest size and inserting an iron thimble of size of house sewer.)

No house sewer greater than 6" in dia. can be connected to a 12" sewer except at manhole.

Connections with vitrified pipe sewers of 12" or more will be made by Sewer Tapper.

(Connections with brick or concrete sewers, the hole will be beat and connection made by Sewer Tapper.)

(Houses draining toward rear, vitrified pipe may be used to a point 10 ft from building (not to be laid under or closer than 5 feet to any building) continuing from this point under the house with iron pipe.)

House sewers must not be more than 6' without special permission. Changes of direction must be made by curved pipe.

Connections to be made by Y branches and 1/8 bends. Sanitary Tees prohibited.

WATER SERVICE.

PERMIT Give location of building, No. of square and lot, No. of stories & front feet, purposes for which water is to be used and time for which tap is required.

Where no main exists, lay a temporary supply pipe of galv'd iron, the portion from building line to temporary main must be drawn lead pipe with stop-cock.

All mains must be tapped by the Tapper of the Water Dept. No main larger than 12" will be tapped except by special permit of the Engineer Commissioner.

No tap shall be nearer than 6' to a bell and no two taps will be nearer than 2 feet.

A separate service is required for each building on same lot other than stable.

All service pipes must be of drawn lead or cast iron. Pipes to be laid at least 4 ft below surface with slack of 6'.

Lead pipes to be class known as A A or extra strong. Services greater than 2" must be cast iron and laid by the Water Dept at owners expense.

No pipe will be driven, channels must be made by separate instrument, or larger pipes through which the service pipe can pass without strain.

Water pipes must have separate trench at least 18" from sewer trench. Two water pipes will be allowed in one trench only when sheet asphalt must be cut.

A Stop-Cock must be provided and extension stop-box placed near curb or parking.

INSIDE PLUMBING.

E (Every house sewer must have an inlet for fresh air, not less than 6 dia entering house side of trap, situated 2 feet back of sidewalk on parked streets and 2 ft from face of curb on unparked streets.)

F Place in house sewer a running trap with vertical pipe of same size with brass trap screw for clean out.

G Each vertical soil pipe to be provided with T branch at lower end with leaded plug.

Reducers to be used, Tail end pieces prohibited.

H Soil pipe will be 1 in larger in dia at a point 1 foot below roof, and extend above roof 2 feet.

Fittings to be used for soil and waste pipe connections. Masonry walls must be reached over soil pipe, or insert in wall an iron pipe, 2" larger than soil pipe.

I All pipes must be accessible, exposed or cased in removable casing.

J All fixtures and rain leaders to be properly trapped. Drips and overflow must be by special pipe and not connect with drain or waste pipes.

Lead lining under fixtures must not connect with drain or waste pipes.

All fixtures to be separately trapped and vented except upper water closet when located within 2 ft of stack.

Vents must be taken from crown of trap when located under floors, vent from side.

K (Vents preferably to connect with soil pipe above highest fixture.)

Vents must not be used for waste.

L Vents for water closets must not be less than 2" dia for other fixtures not less than 1 1/2" except short connections.

Any vent more than 20 ft long must be increased to 2".

When a wrought iron, soil, drain or vent pipe is used it must be galvanized.

N (A service valve to be placed at lowest point inside of building, the water way to be equal to service pipe.)

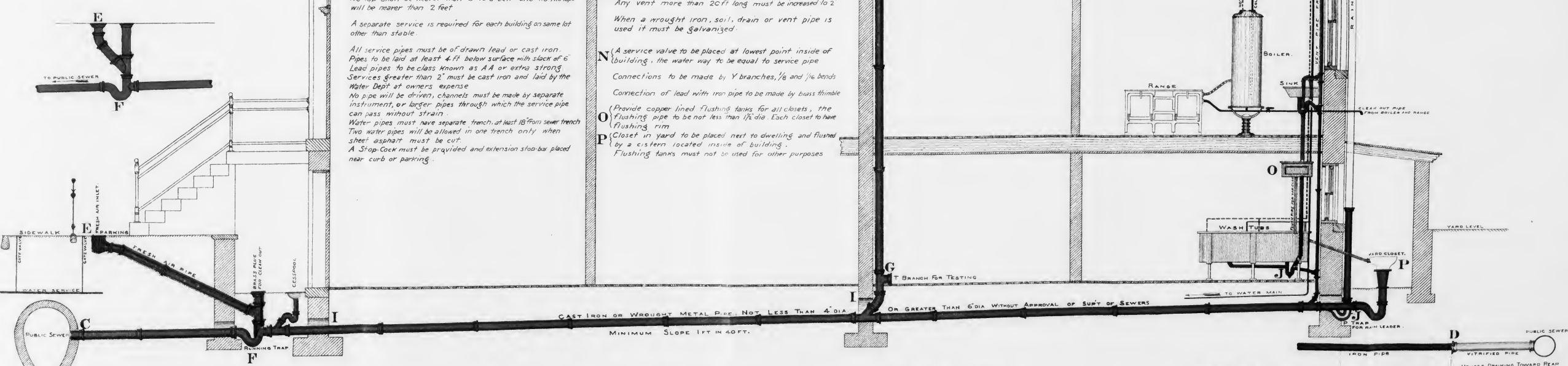
Connections to be made by Y branches, 1/8 and 1/16 bends.

Connection of lead with iron pipe to be made by brass thimble.

O (Provide copper lined flushing tanks for all closets, the flushing pipe to be not less than 1 1/2" dia. Each closet to have flushing rim.)

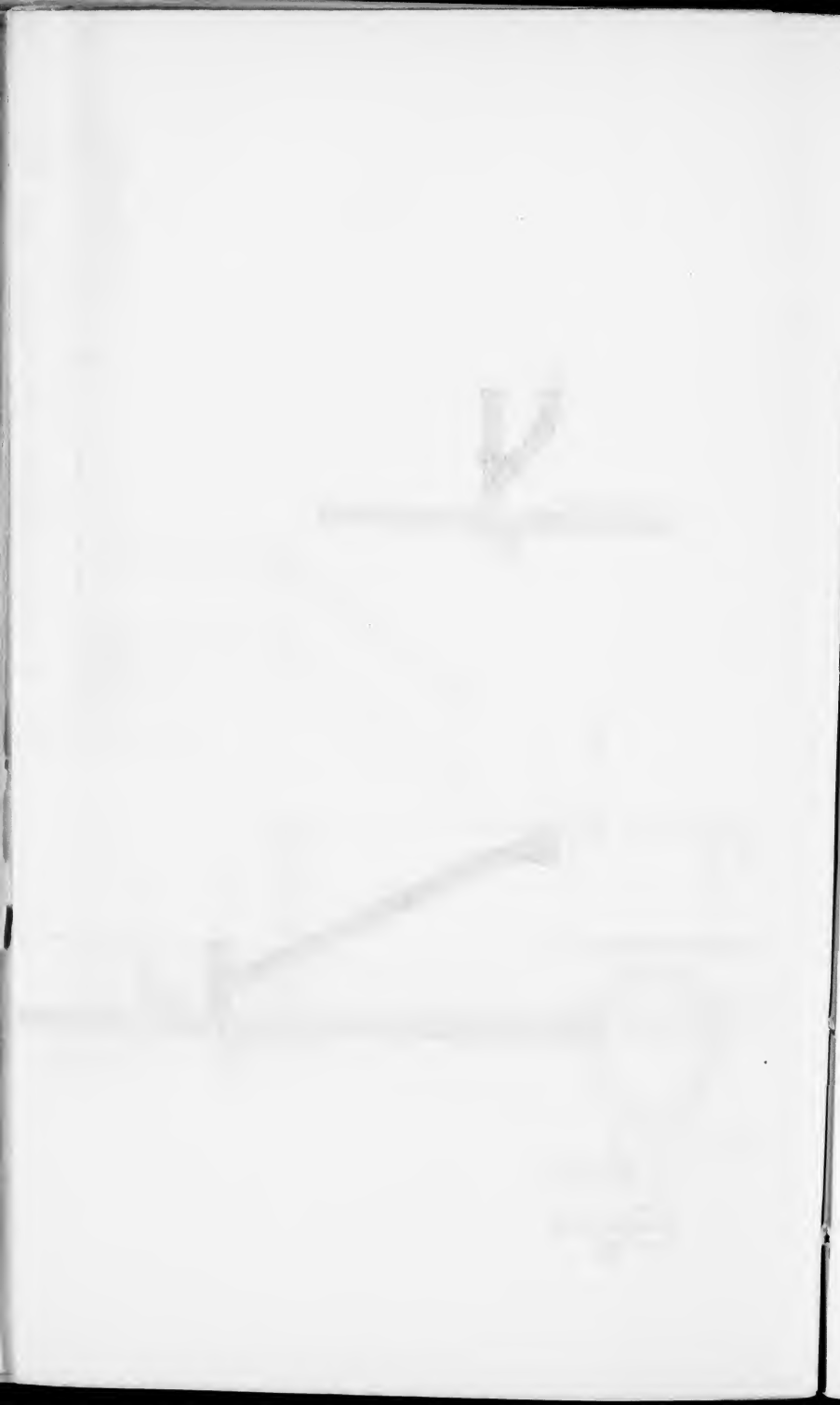
P Closet in yard to be placed next to dwelling and flushed by a cistern located inside of building.

Flushing tanks must not be used for other purposes.



SECTION SHOWING SYSTEM OF HOUSE PLUMBING.
IN THE
DISTRICT OF COLUMBIA.

CHAS. D. COLE DRAFTSMAN
ENGINEER DEPARTMENT D.C.
AUGUST 1922



List of licensed plumbers—Continued.

Names.	Addresses.	Names.	Addresses.
Gaghan, Michael.....	1211 Seventh street NW.	Niland, Patrick.....	1251 Twenty-second street NW.
Gallagher, B. D.	471 D street SW.	Nolan, James.....	721 Fourteenth street NW.
Goodall, Geo. W.....	504 Maryland avenue SW.	Noonan, T. V.....	1425 P street NW.
Gorman, Edw.....	124 B street NE.	Noonan, Thos. S.....	2140 Ward place NW.
Goss, Wm. E.....	321 Missouri avenue NW.	O'Brien, M. J.....	24 Patterson street NE.
Green, Geo. A.....	418 C street SE.	O'Connor, Danl.....	1262 Thirty-second street NW.
Guerin, Jno. R.....	435 N street NW.	O'Donnell, D. A.....	1248 Seventh street NW.
Hannan, Daniel.....	517 F street NW.	O'Hagan, James.....	1917 Pennsylvania avenue NW.
Hannan, Eugene.....	1416 New Jersey avenue NW.	Power, Jno. A., & Co.	430 Tenth street NW.
Hannan, P. F.....	1519 Seventeenth street NW.	Pruitt, Norman.....	814 H street NW.
Harper, J. W.....	619 G street SW.	Purcell, Chas. J.....	483 N street NW.
Harrison, Jas. T., & Son	603 Pennsylvania avenue SE.	Quigley, Patk.....	407 Second street NE.
Harrison, J. T., jr.....	29 Monroe street, Anacostia.	Quilter, Thos. E.....	2300 Brightwood avenue NW.
Healy & Bro.....	508 Eleventh street NW.	Quinter, Jos. R.....	1414 Rhode Island avenue NW.
Herbert, Jos. A.....	206 East Capitol street.	Quinter, Wm. E.....	3311 Brightwood avenue NW.
Horan, Jas. F.....	417 Four-and-a-half street SW.	Ragan, Jas.....	1503 Pennsylvania avenue NW.
Humphrey, Thos.....	1335 F street NW.	Regan, Cornelius.....	1371 Florida avenue NE.
Hurley, J. W.....	713 D street NW.	Reynolds, Wm.....	1728 Pennsylvania avenue NW.
Hurney, Thos.....	1838 Fourteenth street NW.	Roach, James.....	1318 Pennsylvania avenue NW.
Hutchins, Geo. E.....	1208 E street NW.	Robertson, Jas. P.....	531 Fifteenth street NW.
Johnson, Albert A.....	112 F street NW.	Rothwell, Wm.....	24 Ninth street NE.
Keohane, Denis.....	1405 Twelfth street NE.	Roys & Roys.....	646 E street SE.
Kennedy & Schaefer.....	306 Pennsylvania avenue SE.	Schaefer, Geo. F.....	223 D street NW.
Keppel, John.....	174 H street NE.	Schlosser, J. G.....	625 G street SE.
Koch, Wm.....	724 Thirteenth street NW.	Shedd, S. S., & Bro.	432 Ninth street NW.
Krause, John.....	1020 Eighteenth street NW.	Shepherd, A. R.....	913 New Jersey avenue NW.
Lanahan, J. B.....	321 H street NE.	Sherwood, S. H.....	451 P street NW.
Landsdale, E. G.....	2720 M street NW.	Slattery, Edw. D., jr.....	1105 E street NW.
Lanshead, Jas.....	509 Fourteenth street NW.	Soper, B. Alfred.....	642 F street NE.
Lockhead, Chas.....	3027 M street NW.	Sparrow, Wm. A.....	806 North Capitol street.
Loughrey, Robt. G.....	1741 K street NW.	Spearing, Saml. J.....	450 Pennsylvania avenue NW.
Lyon, Karl L.....	1214 E street NW.	Spellman, Wm. H., & Co	1759 R street NW.
Maisak, Geo. H.....	711 Thirteenth street NE.	Strobel, Robert.....	207 Seventh street SW.
Mallet, Edmd., jr.....	604 Fifth street NW.	Suit, Jas. F.....	1614 L street NW.
Mangan, Lawrence J.....	1619 L street NW.	Suman, Jas. F.....	902 H street NW.
Marsden, F. L.....	507 Seventh street SW.	Swann, Jno.....	1509 M street NW.
Martin, W. H.....	1229 H street NW.	Sweet, Wm. T.....	215 Four-and-a-half street NW.
McAvoy, Geo. F.....	1332 H street NW.	Thomas, Wm.....	625 K street NW.
McAvoy, Jno. H.....	1917 Seventeenth street NW.	Thomas, Wm. A.....	1321 Ninth street NW.
McBee, R.....	1127 Seventh street NW.	Thorn, Chas. G.....	1213 F street NW.
McDermott, J. H.....	712 Thirteenth street NW.	Tilp, Fredk.....	804 M street NW.
McMahon, Jno. J.....	2336 H street NW.	Tompkins, Ed. H.....	517 H street NE.
McGhan, Francis P.....	918 F street NW.	Trainor, Jno.....	American University.
Myers, Edmd. B.....	1004 Ninth street NW.	Umhau, C. F.....	1714 Seventh street NW.
McIntosh, Geo. T.....	717 Seventeenth street SE.	Venable, Frank W.....	910 Fourth street SE.
Mills, R.....	1207 Eleventh street SE.	Volland, Edw.....	1724 Fifth street NW.
Mitchell, Jno.....	821 Fourteenth street NW.	Wall, Wm.....	916 Twenty-sixth street NW.
Moran, John.....	2126 Pennsylvania avenue NW.	Ward, Wm. N.....	924 Fourth street NE.
Mulcare & Barco.....	1303 H street N. W.	Waters & Poore.....	1231 Thirty-second street NW.
Murphy, Danl. J.....	1104 Connecticut avenue NW.	Welsh Bros.....	1710 Nineteenth street NW.
Musson, Jno. W.....	1813 Fourteenth street NW.	Williamson, Donald S.....	605 New York avenue NW.
Nealon, Philip H.....	511 Sixth street NE.	Wolters, Fredk. A.....	1004 Four-and-a-half street SW.
		Work, Wm. J.....	725 Ninth street NE.

REPORT OF THE PERMIT CLERK.

WASHINGTON, August 4, 1897.

Permits issued during the year were:

Water connections.....	1,774	
Water repairs.....	831	
Water specials.....	847	3,452
Sewer connections.....	1,874	
Sewer repairs.....	992	
Sewer specials.....	283	3,149
Gas and electric light connections.....	953	
Gas and electric light repairs.....	165	
Gas and electric light specials.....	19	1,137
Lay gas mains.....		69
Lay and repair main and branch conduits.....		33
Erect and replace telegraph and telephone poles.....		128
Erect railings to inclose parkings.....		391
Alleys, close temporarily.....		1
Alleys, grade.....		6
Alleys, place fender stones in to protect walls.....		4
Bridges, haul over loads of 6 tons and over.....		8
Bridges, remove floor temporarily.....		1
Bridges, sprinkle sand on to prevent slipping.....		1
Cables, string fender.....		4
Carriage blocks, place at curb.....		1
Conduits, lay or lower (no fee).....		8
Conduits, railroad, lay (Capitol Railway Company).....		1
Conduits, connect railroad to sewer.....		12
Copings, erect around parkings.....		24
Cables, repair underground.....		11
Cables, operate rope to furnish power.....		1
Cables, haul from railroad depots to power houses.....		3
Driveways, lay across sidewalks and parkings.....		43
Drains, lay.....		7
Drains, clear.....		2
Drilling machine, place on street.....		1
Excavations (miscellaneous).....		3
Electric lights, place on brackets and awning frames.....		10
Fences, erect temporary (no fee).....		3
Fences, replace and repair.....		404
Flume, connect.....		1
Gutters, bridge.....		2
Gutters, build of cement.....		1
Gas pipe, lay.....		1
Gas stopcock-boxes, adjust to grade (general permits).....		3
Hitching posts, erect and straighten.....		18
Hitching posts, remove and repair.....		2
Heating kettle, place on street.....		1
Heating pipe, lay across alley.....		1
Leads across parking, lay.....		72
Leads across parking, repair and relay.....		151
Lamps, put signs on.....		2
Lamps, repair (private).....		3
Material, place construction on streets.....		7
Materials, take from unimproved streets.....		13
Materials, take from streets (parking commission).....		2
Man-hole covers, remove temporarily.....		2
Oil mains, lay.....		1
Oil mains, change location of.....		1
Parkings, grade.....		16
Parkings, pave over.....		19
Parkings, place refreshment stands on.....		2
Parkings, place tent on temporarily.....		1
Parkings, sod and plant flowers in.....		19
Poles, erect by District of Columbia.....		2
Poles, erect lines of trolley.....		2

Poles, erect by B. & P. R. R. Co.....	1
Poles, erect for electric lights (private).....	5
Patrol box, move and relocate.....	1
Railroads, construct and repair (steam and street).....	20
Railroads, lay temporary cross-overs.....	4
Railroads, lay sidings.....	2
Railroads, repair safety gates.....	2
Railroads, erect signal post.....	1
Railroads, general, to repair telegraph line.....	1
Sidewalks, lay.....	33
Sidewalks, lay board.....	1
Sidewalks, cut in front of Executive Mansion.....	1
Sidewalks, repair.....	212
Sidewalks, grade.....	4
Sidewalks, haul over.....	32
Sidewalks, put sockets in.....	1
Sheds, move back to building line.....	1
Sewers, lay.....	2
Sewers, clear.....	3
Stop-cock boxes, adjust to grade.....	2
Traction engines, move over streets and roads.....	11
Trees, cut down.....	4
Trees, place sign on temporarily.....	1
Trees, paint box.....	1
Trees, sod space in sidewalk.....	2
Trees, whitewash.....	44
Terraces on parking, build and repair.....	5
Terraces on parking, erect and replace steps.....	51
Wires, erect overhead connections.....	53
Wires, renew lines of existing legal lines.....	7
Wires, replace iron with copper.....	17
Wires, string and repair.....	19
Wires, place on bridges.....	3
Water-service mains, lay (Ingleside).....	1
Water service repair.....	1
Walls, concrete.....	2
Walls, build retaining.....	14
Wharves, repair and drive piles to protect.....	3
Permits to United States Government:	
Clear sewer lateral at Marine Barracks.....	3
Cut down trees.....	1
Remove bird's nests from (Naval Hospital).....	1
Connect with sewer (Bureau of Engraving and Printing).....	1
Make excavations (officer in charge of Public Buildings and Grounds).....	1
Permits to inaugural committee, 1897.....	3
Permits to employees District of Columbia.....	314
Grand total.....	10, 155

There has been a slight decrease in the number of permits issued as compared with the fiscal year ended June 30, 1896, but the amount received for permit fees, as shown by the report of the collector of taxes District of Columbia, for the fiscal year 1896-97 is \$119 more than for the fiscal year 1895-96.

Permits issued during the fiscal year:

1895-96.....	11, 453
1896-97.....	10, 155

The following table shows the number of permits issued during the five preceding years and the amount of money paid the collector of taxes District of Columbia during that time:

Fiscal year.	Permits issued.	Fees paid.
1891-92.....	9, 456	\$8, 631
1892-93.....	12, 989	12, 214
1893-94.....	8, 064	7, 024
1894-95.....	8, 740	7, 229
1895-96.....	11, 453	7, 236
1896-97.....	10, 155	7, 355

In addition to issuing the permits, 483 communications have been referred to this office, necessitating their being entered in the letters-received book, permits written for the majority of them, the action noted, and their return to the record office of the engineer department of the District of Columbia.

Sixteen hundred and sixty-eight names have been recorded for positions as laborers on the different works of the District of Columbia during the fiscal year ended June 30, 1897.

The continued improvements of the roadways, and especially the sidewalks, in all sections of the District of Columbia, replacing the brick sidewalks with cement or granolithic, also increases the work of the office, for when plumbers or other persons having permits to make excavations the permit must have stamped on the face the kind of pavement to be cut. The office is also required to know that there is a deposit to the credit of the person to whom the permit is issued sufficient to pay the cost of the repairs. In the case of registered plumbers they are required to make a deposit of \$50 before being granted a permit to make a cut in any paved street, with the collector of taxes, and against this deposit is charged the cost of repairing the cuts made by them. The location is reported to the superintendent of streets, now to the computing engineer, and the repairs are made by employees of that division of the engineer department. When the amount charged for repairs against any plumber is \$40, he is notified by statement from this office, and must bring his balance to the original amount (\$50) before additional permits can be issued to make excavations in improved roadways or sidewalks. Should the cost of repairs exceed the deposit, no permits can be issued to the plumber who fails to settle his indebtedness after receiving notice from this office. The vouchers showing the cost of each cut repaired are paid by the auditor of the District of Columbia, a copy of each deposit and repair being kept in this office.

The following shows the amount charged against the deposits of the plumbers and companies owning underground subways, mains, and conduits for work done by the street department in repairing cuts made by them:

Name.	Amount.	Name.	Amount.
J. A. Anadale.....	\$27.74	Jas. F. Horan.....	63.51
Jas. E. Albinston.....	18.22	Ed. J. Hannah.....	13.35
J. I. Atchison.....	31.20	Jos. A. Herbert.....	44.01
Samuel Artz.....	72.27	J. T. Harrison & Son.....	16.65
Geo. W. Ashton.....	69.67	Geo. E. Hutchins.....	4.50
Henry J. Allen.....	27.82	J. W. Hurley.....	15.61
Allen & Van Horn.....	20.97	Thomas Humphrey.....	16.54
Jos. De Bond.....	39.60	J. T. Harrison, jr.....	18.23
Bowden & Buechler.....	34.53	P. F. Hannan.....	34.01
Brill & Hayden.....	36.10	Hill & Prigg.....	18.77
Thomas Brown.....	13.73	J. Wm. Harper.....	67.02
R. C. Brooks.....	43.47	John Krause.....	18.03
C. E. Barrick.....	90.71	John Keppel.....	7.21
Max. A. Beuter.....	44.46	Kennedy & Schaefer.....	40.62
Ed. Barnard.....	17.10	William Koch.....	49.70
Wm. R. Bouis.....	25.06	J. B. Lanahan.....	5.62
Bontz & Stutz.....	50.68	Chas. Lockhead.....	52.71
Jos. A. Baur.....	2.14	Jas. Lockhead.....	20.60
John Carmody.....	66.78	Geo. T. McIntosh.....	138.00
J. F. Craven.....	3.60	John Moran.....	43.25
John Cantwell.....	79.69	R. Mills.....	1.20
Edward Caverly & Co.....	127.08	F. L. Marsden.....	14.05
Wm. P. Campbell.....	39.86	Geo. H. Maisak.....	21.19
J. A. Creamer & Bro.....	29.47	D. J. Murphy.....	14.03
Robt. B. Caverly.....	27.95	E. Mallet, jr.....	50.96
Thos. C. Clark.....	6.75	John Mitchell.....	11.55
Chesapeake & Potomac Telephone Co.....	525.52	J. W. Mussen.....	9.90
Connor Bros.....	88.96	R. McBee.....	17.74
Devereux & Gaghan.....	14.98	Geo. F. McAvoy.....	4.83
A. S. Dent.....	60.14	John J. McMahon.....	36.93
William Duffy.....	16.02	James Nolan.....	97.13
Davis & Kibbey.....	17.52	P. T. Niland.....	31.09
C. E. Dessez.....	14.18	Daniel O'Connor.....	13.65
Peter Daly.....	11.86	D. A. O'Donnell.....	36.35
Frank Daly & Co.....	2.70	Jas. O'Hagan.....	23.81
C. A. Dorsett.....	85.60	John A. Power & Co.....	56.02
E. B. Myers.....	64.76	Postal Telegraph Cable Co.....	174.27
Enright and Newmeyer.....	9.90	Norman Pruitt.....	11.19
R. Fitzgerald.....	11.18	Jos. R. Quinter.....	160.72
Georgetown Gas Light Co.....	108.32	Thos. F. Quilter.....	33.00
Geo. A. Green.....	12.93	William Reynolds.....	6.03
M. Gaghan.....	10.52	John E. Rodbird.....	11.95
Edwd. Gorman.....	56	James Ragan.....	16.09
French & Bennett.....	2.70	William Rothwell.....	32.85
Daniel Hannan.....	51.24	Jas. P. Robertson.....	30.99
		James Roache.....	90

Name.	Amount.	Name.	Amount.
Reinberg & Carroll	44.59	Jas. Cunningham	35.75
Jas. O. Carroll	6.75	William Wall	13.92
G. E. Schaeffer	13.73	Fred. A. Wolters	36.05
Sam'l. J. Spearing	16.05	Wm. J. Work	8.44
A. R. Shepherd	37.55	Waters & Poor	60.54
Jas. L. Suman	12.05	Potomac Electric Power Co	10,229.58
S. S. Shedd & Bro	152.71	Wm. P. Flack	51.04
Dan'l. P. Sullivan	6.15	Sam'l. B. Rose	10.69
Sam'l. H. Sherwood	5.75	Walter Busey	5.40
J. G. Schlosser & Co	15.70	Mulcare & Barco	56.54
B. A. Soper	10.53	E. G. Lansdale	14.11
Edwd. D. Slattery	19.80	C. Regan	53.07
John Swann	4.62	Quinter & Conradis	48.49
Fred Tip	49.90	L. J. Mangan	11.01
C. G. Thorn	113.71	Healy & Bro	54.30
Wm. A. Thomas	32.28	P. H. Nealon	1.80
E. A. Tompkins	49.11	Ed. Volland	13.04
William Thomas	11.04	W. A. Blake	1.95
C. F. Umhau	56.06	Welsh Bros	1.13
United States Electric Lighting Co	5,301.11	Thos. S. Noonan	3.20
F. W. Venable	21.26	Washington Gas Light Co	2,217.50
Wm. N. Ward	15.94	William Conradis	9.39
D. S. Williamson	49.74		

Great care has to be exercised by the force of this office to notify all persons having permits to make excavations of the location of electric-light, telegraph, and telephone wires in the roads, sidewalks, and alleys to guard them from injury by the tools of the workmen.

All permits to make excavations to connect with or repair underground constructions, erect parking fences, hitching posts along the inner edge of the curb, place carriage blocks of prescribed dimensions at the curb, etc., are issued from this office. With the exception of work done by the employees of the District of Columbia and special permits allowed by the plumbing regulations or ordered by the Commissioners of the District of Columbia, a fee of \$1 is charged for each building, lot, premises, or establishment connected and for each excavation made for repairing pipes or other underground structures. This fee is in all cases paid the collector of taxes of the District of Columbia and his receipt entered upon the application before the permit is issued, all other employees of the District of Columbia being prohibited from collecting or receiving or in any manner being the medium for the transmission of funds of any kind whatever due or payable to the District of Columbia.

Very respectfully,

H. M. WOODWARD,
Permit Clerk District of Columbia.

Capt. W. M. BLACK,
Corps of Engineers, U. S. A.,
Engineer Commissioner District of Columbia.

(Through Capt. Lansing H. Beach, Corps of Engineers, U. S. A., assistant to Engineer Commissioner.)

REPORT OF INSPECTOR OF ASPHALT AND CEMENTS.

Sir: The work of testing during the year may be summarized as follows:

Hydraulic cements:		
Natural, brands 7, samples	5,198	
Portland, brands 14, samples	1,569	
		6,767
Asphalts:		
Crude Trinidad, 2 cargoes, samples	13	
Residuum oils	15	
Refined asphalts	2	
Surface mixtures	90	
Miscellaneous asphalts	7	
		127
Sands	2	
Waters	64	
Miscellaneous	11	
		77
Total		6,871

158 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

HYDRAULIC CEMENTS.

The number of barrels inspected and the average of tests of each brand of cement will be found below.

NATURAL CEMENTS.

The 5,198 samples of natural cement represent 51,980 barrels, 3,343 of which were rejected.

TABLE A.

Brand.	Number of barrels.	Number of samples.	Per cent residue, 100-mesh.	Initial set.		Per cent water used.		Temperature of air and water.	Tensile strength.		
				H.	M.	Neat.	2 parts sand.		1 day.	7 days.	7 days, 2 parts sand.
Cumberland	13,800	1,380	14.6	H.	M.	31.3	14.1	72.8	127.6	234.8	112.6
Cumberland and Potomac	2,886	288	15	0	34	31.2	14.7	71.7	168	235.3	140
Lawrenceville	15,923	1,592	17.2	1	06	28.2	14	73	133.2	173	75.6
Norton's Rosendale ..	1	1	10	3	00	31	14	70	54	103	32
Potomac	300	30	27	0	27	29	12	74	82	102	51
Round Top	19,068	1,906	16	0	20	30	14	75	111.5	190.2	90.2
Anchor	1	1	18	1	50	23	12	84	48	115	47

PORTLAND CEMENTS.

The 1,569 samples of Portland cement represent 15,690 barrels, 301 of which were rejected.

TABLE B.

Brand.	Number of barrels.	Number of samples.	Per cent residue, 100 mesh.	Initial set.		Per cent water used.		Temperature of air and water.	Tensile strength.		
				H.	M.	Neat.	Three parts sand.		1 day.	7 days.	7 days, three parts sand.
Alpha	1	1	5	1	0	20	10	84	318	428	180
Atlas	1,475	147	7.5	2	40	19.6	9.5	71.5	345.6	710.6	282.8
Brooks Shoobridge ..	1,711	171	7	3	0	22	10	74	291.4	535	196.3
Germania	7,315	731	6.4	3	40	20.3	9.6	72	315.2	596.2	188.6
Hanover	340	34	9.6	3	40	20.8	9.2	74	370.8	638.8	212
Heyn	3,974	397	6.4	3	10	21	9.1	72.3	339.8	537.4	232.3
Ironclad	2	2	2	7	0	19	9	75	238	624	290
Josson	110	11	6	1	39	20	8	74	378	609	282.5
Keystone	2	2	0	4	0	23	10	68	252	438	176
La Lafarge	1	1	0	6	0	25	9.5	70	85	339	126
Mannheimer	200	20	6	3	0	20	9.5	74	229	544.5	166
Porta	500	50	9.8	1	30	21	9	80.4	311	417	154
Saylor	1	1	1	3	0	20	10	84	457	737	249
White Brothers	1	1	13	0	49	25	10	74	337	387	145

LONG-TIME TESTS ON NATURAL AND PORTLAND CEMENTS.

It should be understood that the tests given in the following table are not supposed to show the relative strength of the different brands, but merely to exhibit the relative gain in strength with age. It can readily be seen by consulting the tables of average tests on cements in this and former reports that some of the samples of cement used in making up these tests are below while others are above the average of their respective brands.

In collecting these samples we endeavored to get as near an average sample as possible by mixing samples taken from numbers of barrels. In the table will be found the number of barrels each sample represents.

TABLE C.

Brand of natural cement.	Percent of water.		Temperature of—		Tensile strength.							
					Neat.		2 parts quartz.					
	Neat.	2 parts quartz.	Air.	Water.	1 day.	7 days.	7 days.	14 days.	21 days.	1 month.	2 months.	
Antietam	32	15	89	88	62	168	48	103	110	124	158	
Cedar Cliff	33	15	90	90	88	185	85	145	152	195	232	
Cumberland	32	15	90	91	169	218	156	208	290	297	307	
Cumberland and Potomac	32	15	91	91	146	204	188	196	230	235	315	
Lawrenceville	31	13	70	70	—	—	84	102	133	148	206	
Shepherdstown	31	14	91	92	61	145	106	144	161	210	227	
Union, mixed with 3 parts quartz	22	10	76	75	94	130	74	93	160	181	194	
Improved Union, mixed with 3 parts quartz	21	10	70	68	102	116	95	—	—	132	178	
Round Top	32	14	90	90	81	203	122	188	223	255	305	

Brand of natural cement.	Tensile strength.											
	2 parts quartz.											
	3 months.	4 months.	5 months.	6 months.	7 months.	8 months.	9 months.	10 months.	11 months.	1 year.	2 years.	3 years.
Antietam	162	161	173	185	180	188	203	228	230	231	240	246
Cedar Cliff	255	256	270	290	309	290	298	304	346	304	384	385
Cumberland	356	366	357	350	355	416	406	429	434	438	446	441
Cumberland and Potomac	403	388	384	397	394	406	388	423	428	436	490	506
Lawrenceville	278	290	263	291	293	—	—	—	—	—	—	—
Shepherdstown	245	223	272	281	305	321	300	301	315	366	356	337
Union, mixed with 3 parts quartz	236	240	244	238	257	262	267	272	306	312	364	—
Improved Union, mixed with 3 parts quartz	162	198	226	232	258	276	280	295	331	322	326	—
Round Top	342	371	378	387	383	413	428	444	451	515	561	566

TABLE D.

Brand of Portland cement.	Percent of water.		Temperature of—		Tensile strength.							
					Neat.		3 parts quartz.					
	Neat.	3 parts quartz.	Air.	Water.	1 day.	7 days.	7 days.	14 days.	1 month.	2 months.	3 months.	
Alpha	21	9	80	80	—	—	105	—	182	310	300	
Alsen	20	10	65	65	292	635	188	—	310	290	323	
Atlas	20	10	90	90	432	768	321	—	441	441	510	
Dufosse & Henry	20	10	70	70	149	546	159	—	188	229	277	
Dyckerhoff	21	10	70	70	345	566	164	—	175	192	236	
Egypt	20	10	68	65	188	278	159	—	205	255	240	
Giant	21	11	72	72	160	495	230	—	275	275	267	
Hanrover	20	10	68	65	295	571	205	—	244	251	277	
Hennore	20	9	78	78	295	657	159	—	203	286	301	
Mannheimer	20	10	78	78	329	525	193	—	226	306	329	
Porta	20	10	70	68	407	415	181	—	257	305	319	
Saylor	20	8	82	82	201	461	135	—	156	205	203	
Standard Silica cement, 1 to 1	22	10	80	80	206	541	216	—	226	285	319	
Standard Silica cement, 1 to 6	22	10	80	80	21	97	46	—	89	96	94	

TABLE D—Continued.

Brand of Portland cement.	Tensile strength.											
	3 parts quartz.											
	4 months.	5 months.	6 months.	7 months.	8 months.	9 months.	10 months.	11 months.	1 year.	2 years.	3 years.	4 years.
Alpha	310	295	327	346	284	295	319	345	350	.....	.....	.....
Alsen	385	380	390	381	379	383	374	377	366	371	.....	.....
Atlas	519	529	538	538	515	501	569	572	546	523	.....	.....
Dufosse & Henry	300	320	319	316	328	322	335	331	332	335	.....	.....
Dyckerhoff	257	293	298	315	315	332	340	345	323	370	.....	.....
Egypt	285	301	341	351	362	360	375	402	394	417	.....	.....
Giant	296	329	325	351	296	304	300	308	327	342	.....	.....
Hannover	301	315	315	311	317	335	340	348	354	.....	.....	.....
Hemmore	323	329	314	345	356	345	310	308	347	355	.....	.....
Mannheimer	335	323	343	342	352	321	341	316	336	.....	.....	.....
Porta	315	322	343	250	275	303	329	339	329	349	.....	.....
Saylor	254	277	289	276	264	279	295	282	279	.....	.....	.....
Standard Silica cement, 1 to 1	336	364	384	377	377	385	394	387	379	.....	.....	.....
Standard Silica cement, 1 to 6	108	127	130	135	146	168	187	183	192	.....	.....	.....

CRUSHING STRENGTH OF CONCRETE OF DIFFERENT AGGREGATES.

During the past year the investigation to determine the relative crushing strength of concretes of different aggregates at various ages ranging from 10 days to 1 year has been completed. The report is given in full below:

WASHINGTON, May 26, 1897.

CAPTAIN: I have the honor of reporting on the tests comparing the relative strength of concrete made with various aggregates with natural cement (Round Top) and Portland cement (Atlas) mortars.

In these tests I have not tried by careful manipulation to get the maximum strength from the material used, but more to get at the relative value of the several concretes as they are made on the practical work here in the District.

These tests were made by determining the weight required to crush 1-foot cubes of the several concretes at the age of 10 days, 1½ months, 3 months, 6 months, and 1 year. The molds for these foot cubes were made of cast iron, one-fourth inch in thickness, stiffened by two heavy ribs. These molds were made in two pieces, which were fastened together at the two opposite corners with bolts.

The concrete was rammed into the mold with an ordinary asphalt tamper.

The ingredients used in the concrete were sent from the District and were selected under my direction as representing the average material then being furnished for concrete in the District.

In mixing the concrete all the ingredients were weighed for each batch, sufficient for 2 cubic feet being mixed at a time. The concretes were mixed, by a man experienced in the work, in the usual way. The damp sand was first thoroughly mixed with the dry cement, after which sufficient water was added to make a plastic mortar. This mortar was mixed with the aggregate, which had been previously sprinkled, by turning over with a shovel until every stone was thoroughly coated with mortar. The concrete was then shoveled into the molds, care being taken that the coarse and fine stone should remain evenly distributed. The molds were filled to the depth of 4 inches and lightly rammed, this operation being continued until the molds were filled. The ramming was done in moderation, just sufficient to settle the concrete and bring mortar to the surface. The average time taken to mix a batch and fill molds was fifteen minutes.

The concrete cubes were kept in a damp condition until tested, by being thoroughly wet twice a day.

CEMENTS.

Tests on the cements used will be found below. These were tested not only with standard quartz, but with the concrete sand used.

	Natural cement (Round Top).	Portland cement (Atlas).
Retained on 100-mesh sieve.....	14 per cent.....	8.5 per cent.
Initial set, time.....	20 minutes.....	3 hours 10 minutes.
Hard set, time.....	36 minutes.....	5 hours 5 minutes.
Tensile strength (neat):		
1 day neat.....	96 pounds per square inch.	441 pounds per square inch.
7 days neat.....	180 pounds per square inch.	830 pounds per square inch.
Tensile strength (quartz and sand):		
7 days (2 parts standard quartz).....	91 pounds per square inch.	
7 days (3 parts standard quartz).....		248 pounds per square inch.
7 days (2 parts concrete sand).....	46 pounds per square inch.	
7 days (3 parts concrete sand).....		256 pounds per square inch.
1 month (2 parts standard quartz).....	188 pounds per square inch.	
1 month (3 parts standard quartz).....		420 pounds per square inch.
1 month (2 parts concrete sand).....	103 pounds per square inch.	
1 month (3 parts concrete sand).....		401 pounds per square inch.
3 months (2 parts standard quartz).....	327 pounds per square inch.	
3 months (3 parts standard quartz).....		398 pounds per square inch.
3 months (2 parts concrete sand).....	247 pounds per square inch.	
3 months (3 parts concrete sand).....		465 pounds per square inch.
6 months (2 parts standard quartz).....	414 pounds per square inch.	
6 months (3 parts standard quartz).....		428 pounds per square inch.
6 months (2 parts concrete sand).....	Lost.....	
6 months (3 parts concrete sand).....		486 pounds per square inch.
1 year (2 parts standard quartz).....	485 pounds per square inch.	
1 year (3 parts standard quartz).....		474 pounds per square inch.
1 year (2 parts concrete sand).....	340 pounds per square inch.	
1 year (3 parts concrete sand).....		403 pounds per square inch.

From past experience the above tests show the samples of cement to be slightly below the average of their respective brands.

SANDS.

The concrete sand used was obtained from the District sand yard and is similar to that in use for concrete in the District. Its tensile strength, with the cements used, is given above under the cement tests.

One cubic foot, slightly damp, weighed 90 pounds.

On sifting it has the following mesh composition:

	Per cent.		Per cent.
Retained on—		Retained on—	
3-mesh per linear inch sieve.....	0	60-mesh per linear inch sieve.....	7
6-mesh per linear inch sieve.....	7.5	80-mesh per linear inch sieve.....	2
8-mesh per linear inch sieve.....	7.5	100-mesh per linear inch sieve.....	.5
10-mesh per linear inch sieve.....	13	Passed 100-mesh per linear inch sieve.....	.5
20-mesh per linear inch sieve.....	30	Void in loose sand.....	44.1
40-mesh per linear inch sieve.....	32		

Aggregates used in concretes (I use the word "aggregate" to designate the other ingredients in the concrete besides the mortar): The stone used in these concretes is a gneiss quarried from the south bank of the Potomac about 2 miles above the Aqueduct Bridge. The gravels used were clean quartz gravels, dredged from the river at the foot of Seventeenth street.

Concrete No. 1.—Composed of, by volume, 1 part natural cement (Round Top), 2 parts concrete sand, 6 parts crushed Potomac bluestone (concrete size), or, by weight, 1 part cement, 2.57 parts sand, 8.14 parts bluestone.

One cubic foot of the above stone weighed 96 pounds; per cent void, 45.3.

Weights used in making up 2 cubic feet of this concrete: 24 pounds cement, 63 pounds concrete sand, 195 pounds concrete stone. These weights gave just enough concrete for 2 cubic feet.

Concrete No. 2.—Composed of, by volume, 1 part natural cement (Round Top), 2 parts concrete sand, 3 parts crushed Potomac bluestone, 3 parts average gravel; or, by weight, 1 part cement, 2.57 parts sand, 4.07 parts stone, 4.80 parts gravel.

One cubic foot of above aggregate weighed 108 pounds; void, 35.5 per cent.

Weights used in making up 2 cubic feet of the concrete: 24 pounds cement, 62 pounds concrete sand, 97 pounds concrete stone, 114 pounds average gravel. Filled 2 cubic feet, with 10 pounds left over.

The concrete stone used to mix with this gravel was the same as in concrete No. 1.

Concrete No. 3.—Composed of, by volume, 1 part natural cement (Round Top), 2 parts concrete sand, 2 parts average gravel, 4 parts crushed Potomac bluestone; or, by weight, 1 part cement, 2.57 parts sand, 3.2 parts gravel, 5.43 parts stone.

The stone and gravel used as the aggregate in this concrete were the same as those used in concrete No. 2.

One cubic foot of above aggregate weighed 106 pounds; void, 37.8 per cent.

Weights used in mixing up sufficient for 2 cubic feet of concrete: 24 pounds cement, 62 pounds sand, 76 pounds average gravel, 130 pounds concrete stone. Filled 2 cubic feet with 1 or 2 pounds left over.

Concrete No. 4.—Composed of, by volume, 1 part natural cement (Round Top), 2 parts concrete sand, 6 parts of a mixture of three-fourths crushed Potomac bluestone (concrete size) and one-fourth granolithic from Potomac bluestone; or, by weight, 1 part cement, 2.57 parts sand, 6.75 parts stone, 2.25 parts granolithic.

One cubic foot of above aggregate weighed 105 pounds; void, 39.5 per cent.

Weights used in making up 2 cubic feet of the concrete: 24 pounds natural cement, 62 pounds sand, 162 pounds stone, 54 pounds granolithic. Made 2 cubic feet and 2 or 3 pounds over.

Concrete No. 5.—Composition of, by volume, 1 part natural cement (Round Top), 2 parts concrete sand, 6 parts of average and large gravel mixed one-half by one-half; or, by weight, 1 part cement, 2.57 parts sand, 9.8 parts mixed gravel.

One cubic foot above mixed gravel weighed 114 pounds; per cent void, 29.3.

Weights used in making up 2 cubic feet of this concrete: 24 pounds natural cement, 62 pounds sand, 116 pounds gravel, 116 pounds large gravel. These weights filled 2 cubic feet, with about 25 pounds left over.

Concrete No. 6.—Composition, by volume, 1 part natural cement (Round Top), 2 parts concrete sand, 6 parts coarse concrete Potomac bluestone; or, by weight, 1 part cement, 2.57 parts sand, 8.14 parts stone.

One cubic foot of above stone weighed 95 pounds; per cent void, 45.3.

Weights used in making up 2 cubic feet of this concrete: 24 pounds cement, 62 pounds concrete sand, 195 pounds stone. These weights gave just sufficient concrete to fill 2 cubic feet.

Concrete No. 7.—Composed of, by volume, 1 part Portland cement (Atlas), 2 parts concrete sand, 6 parts crushed concrete bluestone (same as in concrete No. 1); or, by weight, 1 part cement, 1.75 parts sand, 5.53 parts stone.

Weights used in making up 2 cubic feet of concrete: 35 pounds cement, 63 pounds sand, 200 pounds stone. This made sufficient to fill 2 cubic feet with about 2 pounds over.

Concrete No. 8.—Composed of, by volume, 1 part (Atlas) Portland cement, 2 parts concrete sand, 3 parts average gravel, 3 parts concrete bluestone (the gravel and stone same as used in concrete No. 2); or, by weight, 1 part cement, 1.75 parts sand, 3.26 parts gravel, 2.77 parts stone.

Weights used to make up 2 cubic feet concrete: 36 pounds cement, 63 pounds sand, 116 pounds gravel, 100 pounds stone, made 2 cubic feet with about 12 pounds left over.

Concrete No. 9.—Composed of, by volume, 1 part Portland cement (Atlas), 2 parts concrete sand, 2 parts average gravel, 4 parts concrete bluestone (aggregate same as in concrete No. 3); or, by weight, 1 part cement, 1.75 parts sand, 2.17 parts gravel, 3.69 parts stone.

Weights used to make up 2 cubic feet of concrete: 36 pounds cement, 63 pounds sand, 79 pounds gravel, 133 pounds stone, made 2 cubic feet, with about 4 pounds left over.

Concrete No. 10.—Composed of, by volume, 1 part Portland cement (Atlas), 2 parts concrete sand, 6 parts of a mixture of Potomac bluestone (concrete size) and granolithic mixed, three-fourths to one-fourth, respectively; (aggregate same as in concrete No. 4); or, by weight, 1 part cement, 1.75 parts sand, 6.13 parts of stone and granolithic.

Weights used in making up 2 cubic feet of this concrete: 36 pounds cement, 63 pounds sand, 160 pounds concrete stone, 33 pounds granolithic. This filled 2 cubic feet, with about 5 pounds left over.

Concrete No. 11.—Composed of, by volume, 1 part Portland cement (Atlas), 2 parts concrete sand, 8 parts average gravel, 3 parts large gravel (aggregate same as concrete No. 3); or, by weight, 1 part cement, 1.75 parts sand, 3.82 parts average gravel, 3.82 parts large gravel.

Weights used in making up 2 cubic feet of this concrete: 36 pounds cement, 63 pounds sand, 119 pounds average gravel, 119 pounds large gravel. This made 2 cubic feet, with about 25 pounds left over.

Concrete No. 12.—Composition, by volume, 1 part Portland cement (Atlas), 2 parts concrete sand, 6 parts coarse concrete Potomac bluestone (stone same as in concrete No. 6); or, by weight, 1 part cement, 1.75 parts concrete sand, 5.53 parts coarse stone.

Weights used to make up 2 cubic feet of this concrete: 36 pounds cement, 63 pounds sand, 200 pounds coarse stone. Just filled 2 cubic feet.

TABLE E.—Mesh composition, weight per cubic feet, and per cent void of the different aggregates.

Mesh composition of aggregates.	Concrete Nos. 1 and 7.	Concrete Nos. 2 and 8.		Concrete Nos. 3 and 9.		Concrete Nos. 4 and 10.	Concrete Nos. 5 and 11.	Concrete Nos. 6 and 12.
	Stone.	Stone.	Gravel	Stone.	Gravel	Stone.	Gravel	Stone.
Retained on—	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>
2½ inch mesh sieve.....	0	0	0	0	0	0	0	3
2 inch mesh sieve.....	3	3	3	3	2.2	2.2	16	16
1½ inch mesh sieve.....	17	17	17	17	13	0	56	56
1¼ inch mesh sieve.....	8	8	8	8	6	2.25	17	17
1½ inch mesh sieve.....	10	10	0	10	0	7.5	8	8
1 inch mesh sieve.....	12	12	1	12	1	9	8.75	0
¾ inch mesh sieve.....	16	16	2	16	2	12	11.25	-----
2 mesh per linear inch sieve.....	19	19	12	19	12	14	22	-----
3 mesh per linear inch sieve.....	11	11	27	11	27	9	18	-----
6 mesh per linear inch sieve.....	3	3	42	3	42	18	21.5	-----
8 mesh per linear inch sieve.....	0.5	0.5	9	0.5	9	6	4.5	-----
10 mesh per linear inch sieve.....	0.5	0.5	4	0.5	4	1.6	2	-----
Passed through 10 mesh per linear inch sieve.....	Trace.	Trace.	3	Trace.	3	1	1.5	-----
Void in aggregate.....	45.3	35.5	-----	37.8	-----	39.5	29.3	45.7
Weight 1 cubic foot, aggregate, pounds.....	96	108	-----	106	-----	105	114	95

Weights used in making up 2 cubic feet of the concrete: 24 pounds cement, 62 pounds concrete sand, 97 pounds concrete stone, 114 pounds average gravel, filled 2 cubic feet, with 10 pounds left over.

The concrete stone used to mix with this gravel was the same as in concrete No. 1.

Concrete No. 3.—Composed of, by volume, 1 part natural cement (Round Top), 2 parts concrete sand, 2 parts average gravel, 4 parts crushed Potomac bluestone; or, by weight, 1 part cement, 2.57 parts sand, 3.2 parts gravel, 5.43 parts stone.

The stone and gravel used as the aggregate in this concrete were the same as those used in concrete No. 2.

One cubic foot of above aggregate weighed 106 pounds; void, 37.8 per cent.

Weights used in mixing up sufficient for 2 cubic feet of concrete: 24 pounds cement, 62 pounds sand, 76 pounds average gravel, 130 pounds concrete stone. Filled 2 cubic feet with 1 or 2 pounds left over.

Concrete No. 4.—Composed of, by volume, 1 part natural cement (Round Top), 2 parts concrete sand, 6 parts of a mixture of three-fourths crushed Potomac bluestone (concrete size) and one-fourth granolithic from Potomac bluestone; or, by weight, 1 part cement, 2.57 parts sand, 6.75 parts stone, 2.25 parts granolithic.

One cubic foot of above aggregate weighed 105 pounds; void, 39.5 per cent.

Weights used in making up 2 cubic feet of the concrete: 24 pounds natural cement, 62 pounds sand, 162 pounds stone, 54 pounds granolithic. Made 2 cubic feet and 2 or 3 pounds over.

Concrete No. 5.—Composition of, by volume, 1 part natural cement (Round Top), 2 parts concrete sand, 6 parts of average and large gravel mixed one-half by one-half; or, by weight, 1 part cement, 2.57 parts sand, 9.8 parts mixed gravel.

One cubic foot above mixed gravel weighed 114 pounds; per cent void, 29.3.

Weights used in making up 2 cubic feet of this concrete: 24 pounds natural cement, 62 pounds sand, 116 pounds gravel, 116 pounds large gravel. These weights filled 2 cubic feet, with about 25 pounds left over.

Concrete No. 6.—Composition, by volume, 1 part natural cement (Round Top), 2 parts concrete sand, 6 parts coarse concrete Potomac bluestone; or, by weight, 1 part cement, 2.57 parts sand, 8.14 parts stone.

One cubic foot of above stone weighed 95 pounds; per cent void, 45.3.

Weights used in making up 2 cubic feet of this concrete: 24 pounds cement, 62 pounds concrete sand, 195 pounds stone. These weights gave just sufficient concrete to fill 2 cubic feet.

Concrete No. 7.—Composed of, by volume, 1 part Portland cement (Atlas), 2 parts concrete sand, 6 parts crushed concrete bluestone (same as in concrete No. 1); or, by weight, 1 part cement, 1.75 parts sand, 5.53 parts stone.

Weights used in making up 2 cubic feet of concrete: 35 pounds cement, 63 pounds sand, 200 pounds stone. This made sufficient to fill 2 cubic feet with about 2 pounds over.

Concrete No. 8.—Composed of, by volume, 1 part (Atlas) Portland cement, 2 parts concrete sand, 3 parts average gravel, 3 parts concrete bluestone (the gravel and stone same as used in concrete No. 2); or, by weight, 1 part cement, 1.75 parts sand, 3.26 parts gravel, 2.77 parts stone.

Weights used to make up 2 cubic feet concrete: 36 pounds cement, 63 pounds sand, 116 pounds gravel, 100 pounds stone, made 2 cubic feet with about 12 pounds left over.

Concrete No. 9.—Composed of, by volume, 1 part Portland cement (Atlas), 2 parts concrete sand, 2 parts average gravel, 4 parts concrete bluestone (aggregate same as in concrete No. 3); or, by weight, 1 part cement, 1.75 parts sand, 2.17 parts gravel, 3.69 parts stone.

Weights used to make up 2 cubic feet of concrete: 36 pounds cement, 63 pounds sand, 79 pounds gravel, 133 pounds stone, made 2 cubic feet, with about 4 pounds left over.

Concrete No. 10.—Composed of, by volume, 1 part Portland cement (Atlas), 2 parts concrete sand, 6 parts of a mixture of Potomac bluestone (concrete size) and granolithic mixed, three-fourths to one-fourth, respectively; (aggregate same as in concrete No. 4); or, by weight, 1 part cement, 1.75 parts sand, 6.13 parts of stone and granolithic.

Weights used in making up 2 cubic feet of this concrete: 36 pounds cement, 63 pounds sand, 165 pounds concrete stone, 55 pounds granolithic. This filled 2 cubic feet, with about 5 pounds left over.

Concrete No. 11.—Composed of, by volume, 1 part Portland cement (Atlas), 2 parts concrete sand, 3 parts average gravel, 3 parts large gravel (aggregate same as concrete No. 5); or, by weight, 1 part cement, 1.75 parts sand, 3.32 parts average gravel, 3.32 parts large gravel.

Weights used in making up 2 cubic feet of this concrete: 36 pounds cement, 63 pounds sand, 119 pounds average gravel, 119 pounds large gravel. This made 2 cubic feet, with about 25 pounds left over.

Concrete No. 12.—Composition, by volume, 1 part Portland cement (Atlas), 2 parts concrete sand, 6 parts coarse concrete Potomac bluestone (stone same as in concrete No. 6); or, by weight, 1 part cement, 1.75 parts concrete sand, 5.53 parts coarse stone.

Weights used to make up 2 cubic feet of this concrete: 36 pounds cement, 63 pounds sand, 200 pounds coarse stone. Just filled 2 cubic feet.

TABLE E.—*Mesh composition, weight per cubic feet, and per cent void of the different aggregates.*

Mesh composition of aggregates.	Concrete Nos. 1 and 7.	Concrete Nos. 2 and 8.		Concrete Nos. 3 and 9.		Concrete Nos. 4 and 10.	Concrete Nos. 5 and 11.	Concrete Nos. 6 and 12.
	Stone.	Stone.	Gravel	Stone.	Gravel	Stone.	Gravel	Stone.
Retained on—	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>
2½ inch mesh sieve.....	0	0	-----	0	-----	0	-----	3
2 inch mesh sieve.....	3	3	-----	3	-----	2.2	-----	16
1½ inch mesh sieve.....	17	17	-----	17	-----	13	0	56
1¼ inch mesh sieve.....	8	8	-----	8	-----	6	2.25	17
1½ inch mesh sieve.....	10	10	0	10	0	7.5	8	8
1 inch mesh sieve.....	12	12	1	12	1	9	8.75	0
¾ inch mesh sieve.....	16	16	2	16	2	12	11.25	-----
2 mesh per linear inch sieve...	19	19	12	19	12	14	22	-----
3 mesh per linear inch sieve...	11	11	27	11	27	9	18	-----
6 mesh per linear inch sieve...	3	3	42	3	42	18	21.5	-----
8 mesh per linear inch sieve...	0.5	0.5	9	0.5	9	6	4.5	-----
10 mesh per linear inch sieve...	0.5	0.5	4	0.5	4	1.6	2	-----
Passed through 10 mesh per linear inch sieve.....	Trace.	Trace.	3	Trace.	3	1	1.5	-----
Void in aggregate.....	45.3	35.5		37.8		39.5	29.3	45.7
Weight 1 cubic foot, aggregate, pounds.....	96	108		106		105	114	95

TABLE F.

Given in the following table will be found the proportion, by volume, of the different ingredients used in the several concretes, and calculations on volumes and void that are self-explanatory:

Concrete number.	Kind of cement used.	Proportion of constituents in concrete by volume.				Cubic feet of water used in mixing 1 cubic foot cement and 2 cubic feet sand into mortar.	Cubic feet of mortar obtained from 1 cubic foot cement and 2 cubic feet sand.	Ratio, by volume, of void in aggregate to mortar (void = 1).	Ratio, by volume, of void in stone, of used (void = 1).	Number of cubic feet of rammed concrete obtained from 1 cubic foot cement and 2 cubic feet sand, 6 cubic feet aggregate.	Number of cubic feet of rammed concrete obtained with 1 cubic foot stone.	Tensile strength of mortars mixed 1:2 with natural and 1:3 with Portland cements.		Ultimate strength of concrete per cubic foot.	
		Cement.	Sand.	Gravel.	Stone.							7 days.	1 year.	10 days.	1 year.
1	Natural (Round Top)/a.	1	12	3	9	b. 7.22	28	0.839	2.21	5.91	0.985	Lbs.	Lbs.	Lbs.	Lbs.
2	do. a.	1	12	3	9	b. 7.22	28	1.070	2.21	5.91	2.040	46	340	32,900	131,700
3	do. a.	1	12	2	4	b. 7.22	28	1.006	1.10	5.95	1.487	46	340	15,500	121,100
4	do. a.	1	12	2	4	b. 7.22	28	1.006	1.10	5.95	1.487	46	340	15,500	131,700
5	do. a.	1	12	6	6	b. 7.22	28	1.201	1.201	6.33	.997	46	340	115,200	115,200
6	do. a.	1	12	6	6	b. 7.22	28	1.201	1.201	6.33	.997	46	340	12,500	109,900
7	do. a.	1	12	6	6	b. 7.22	28	.839	2.21	5.91	.985	46	340	12,500	119,300
8	Portland (Atlas)/c.	1	12	3	6	b. 6.44	27	.839	2.21	5.91	.985	256	493	130,750	440,040
9	do. c.	1	12	3	6	b. 6.44	27	1.070	2.21	6.12	2.040	256	493	136,750	396,200
10	do. c.	1	12	2	4	b. 6.44	27	1.006	1.10	5.95	1.487	256	493	136,750	408,300
11	do. c.	1	12	6	6	b. 6.44	27	1.201	1.201	6.33	.997	256	493	99,900	388,700
12	do. c.	1	12	6	9	b. 6.44	27	.839	2.21	5.91	.985	256	493	99,900	408,700
13	do. c.	1	12	6	9	b. 6.44	27	.839	2.21	5.91	.985	256	493	99,900	296,300

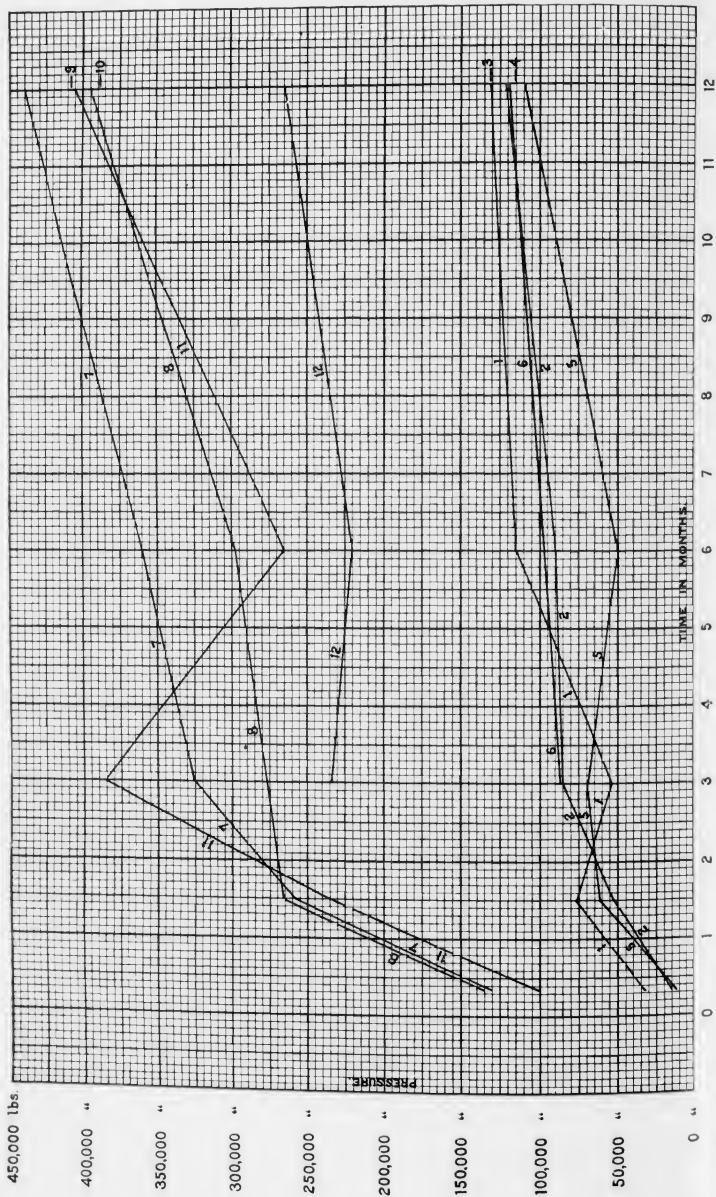
a Somewhat similar in composition to Louisville and Rosendale cements.

b This includes 4.4 per cent of moisture already in the sand.

c Of a similar composition to all high-grade Portland cement.



ULTIMATE STRENGTH OF CONCRETE—1-FOOT CUBES.



Proportions by weight given in these concretes were calculated from the weights per cubic foot of the various ingredients. The weights per cubic foot of the ingredients were determined as follows:

The measure, which was a box with an inside measurement of 1 cubic foot, was filled half full of material to be weighed and jolted four times, then filling it full, and after four more jolts it was struck off and weighed. In this method of measuring the cubic foot of material was not absolutely loose, nor was it by any means the most compact possible, but it gave me much more concordant results than weighing the material either loose or after shaking until it has reached its minimum volume.

The voids given are calculated from these measurements, the specific gravity of the stone being taken 2.8 and that of the gravel 2.6.

The crushing of cubes.—The crushing tests on the cubes were made under the supervision of I. H. Woolson, M. E., in charge of mechanical laboratory, School of Mines, Columbia University. The ten-day tests were made on a 150,000-pound Emery testing machine in the mechanical testing laboratory of the School of Mines; all other tests were made on a 600,000-pound hydraulic press at Watson & Stillman Hydraulic Press Works, New York City. The cubes were crushed parallel to the way they were packed into the mold. The ten-day cubes were crushed between sand beds. The crushing faces of all the other cubes were faced with plaster of paris twenty-four hours before testing. As the hydraulic press was known to be inaccurate, due to the friction between the piston and its packing, and that the error increases with the pressure, this error was determined by comparing hydraulic press with an Emery testing machine, as follows:

Ten blocks of yellow pine were cut from the same piece of timber. Six of the blocks were crushed on the Emery machine, with an average of 135,000 pounds, the highest being 137,000, the lowest 133,000 pounds. The other four blocks were crushed on the hydraulic press, giving an average of 140,000 pounds—maximum, 141,000; minimum, 138,000 pounds.

This shows the press to read 5,000 pounds too high at 135,000, or 3.7 per cent too high. Mr. Woolson, who has since made a very thorough and careful investigation on the friction of hydraulic presses, states that 8 per cent is a very fair maximum allowance to make on these tests. As these tests were made merely to compare the several concretes and not for the actual strength, the correction has not been made in the results given.

Below will be found a table giving the composition by volume and the average crushing strength in pounds of the cubes. The figures given for the crushing strength of all the concretes for ten days, forty-five days, three months, and six months are the average of the tests of two cubes each; those for the one year are the average of five cubes each.

TABLE G.

No.	Composition of concretes, by volume.	10 days.	45 days.	3 mos.	6 mos.	1 year.
		<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
1	1 part natural cement, 2 parts sand—					
2	6 parts average concrete stone.....	32,900	77,687	54,022	114,412	131,700
3	3 parts average concrete stone, 3 parts gravel.....	15,500	52,362	85,315	90,965	121,100
4	4 parts average concrete stone, 2 parts gravel.....					131,700
5	6 parts (1 average concrete stone, 1 granolithic).....					115,200
6	6 parts average gravel.....	12,500	60,652	51,980	49,437	109,900
7	6 parts coarse concrete stone (no fine).....			85,880		119,300
8	1 part (Altas) Portland cement, 2 parts sand—					
9	6 parts average concrete stone.....	130,750	$\left. \begin{array}{l} a\ 343,520 \\ 172,325 \end{array} \right\}$	324,875	361,600	440,040
10	3 parts average concrete stone, 3 parts gravel.....	136,750	266,962		298,037	396,200
11	4 parts average concrete stone, 2 parts gravel.....					408,300
12	6 parts (1 average concrete stone, 1 granolithic).....					388,700
13	6 parts average gravel.....	99,900	234,475	385,612	265,550	406,700
14	6 parts coarse concrete stone (no fine).....			234,475	220,350	266,300

^a There being such a great difference in the crushing of the two cubes, I give the strength of each cube and not the average.

In examining the results of these tests it is evident, especially with the natural cement, that gravel makes a much weaker concrete at the start than stone. This was also strongly manifested in the handling of the cubes for the ten-day test; greatest care was necessary to prevent the edges and corners being broken off those cubes containing gravel, while the all-stone cubes were much more durable. Disregarding the three and six months' tests, which appear unreliable, it is very evident that the strength of the gravel is rapidly gaining on the stone concrete, and will in time, I believe, pass it. From these tests, if we disregard the cost and are working for strength only it would seem that the kind of aggregate to use should depend entirely on the class of work.

If the work is of such a character that the concrete will be subjected to as much strain during its first month as it will ever receive, the aggregate should be of stone alone, when natural cement is used, and stone or stone and gravel when Portland cement. Gravel alone should be used as an aggregate with natural cement in concrete only when its maximum strain will be received after a year. In the case of Portland cement, however, gravel alone may be used in concrete receiving its maximum strain after three months.

Supplemental test.—As there was a little material left after making up the cubes for the above tests, I made 4 cubes of 1 part Portland cement, 2 parts sand, 6 parts coarse gravel, by volume. The first two were made so wet that the water ran from the concrete when tamped in the mold; the other two were made with just sufficient water to make a plastic mortar, such as was used in the foregoing concrete tests.

These cubes crushed at the end of the year as follows: Very wet concrete, No. 1, 331,749 pounds; No. 2, 359,897 pounds; average, 345,823 pounds. Medium wet concrete, No. 3, 361,908 pounds; No. 4, 437,305 pounds; average, 399,606 pounds.

Thinking that the above might be of interest,

Very respectfully,

A. W. Dow,

Inspector of Asphalt and Cements.

Capt. W. M. BLACK,

Corps of Engineers,

Engineer Commissioner of the District of Columbia.

It is to be hoped that further investigation may be carried on on concrete. The investigations that I would suggest are: The values of different grades of sand in concrete making and the proper materials and proportioning of material to give the most economical concrete for a given class of work.

The latter investigation would throw valuable light on some very pertinent points not generally considered in choosing the class of concrete for different work, and I feel that the knowledge gained would more than repay the labor and expense entailed.

ASPHALT PAVING.

Crude Trinidad asphalt.—The Barber Asphalt Paving Company are the only importers of crude Trinidad asphalt in this city, the Cranford Paving Company buying their asphalt cement from the former.

Thirteen samples, representing two cargoes, have been analyzed of this asphalt. The average per cent bitumen soluble in carbon disulphide for the cargoes is 52.9 per cent.

Petroleum residuum oils.—Fifteen residuums have been examined during the past year for the several paving companies. They have been from the works of the Standard Oil Company at Olean, N. Y., and have been of a fairly uniform quality. The method of examination is by ascertaining the flash point and noting the physical properties. If they are at all abnormal the residuum is subjected to a distillation at 400° F. for thirty hours, the per cent loss determined, and the character of the residue noted.

Asphalt cements.—Penetrations of the asphalt cement used in each day's work have been taken with the results following:

	Cranford Paving Co.	Barber Paving Co.
Average penetration at 77° F	77	85
Highest penetration at 77° F	83	100
Lowest penetration at 77° F	74	76

Sand for asphalt surface.—The sand used in asphalt surface is made by mixing a down-river beach sand with the sand dredged from the river just north of the Long Bridge. When this mixture does not run fine enough, bluestone dust is added to make up the deficiency in fine material. The Barber Paving Company, not satisfied with the quantity of fine material derived from the mixed sands and bluestone dust, have added dust while the materials were being mixed on the platform.

The siftings of the sands extracted from the samples of asphalt surface mixture are as follows:

	Barber Paving Co.	Cranford Paving Co.
Retained on—	<i>Per cent.</i>	<i>Per cent.</i>
20-mesh per linear inch.....	2.50	3.50
40-mesh per linear inch.....	24.50	27
60-mesh per linear inch.....	31	32.50
80-mesh per linear inch.....	16	15
100-mesh per linear inch.....	11	10
Passed 100-mesh per linear inch.....	15	13

Asphalt surface mixture.—Samples of surface mixture taken to represent each day's work at resurfacing or new work have given on analysis the following results:

	Cranford Paving Co.	Barber Paving Co.
Number of samples.....	46	44
Average per cent bitumen.....	10.6	10.5
Lowest per cent bitumen.....	9.2	9
Highest per cent bitumen.....	12.6	12.7

Natural asphalts.—Several samples of new asphalts have been examined during the past year. But one is of sufficient interest to mention. This asphalt is mined at Tuxpan, Mexico. It is of such a consistency when found that it is ready for making into pavement without the addition of a flux. This is a great advantage over the other asphalts, all of which have to be fluxed before using. Its physical and chemical properties lead one to believe that it will rank among the best asphalts for paving.

Trinidad lake asphalt has been used exclusively in pavements laid in the District during the past year, the Barber Asphalt Paving Company having the contract for all new work, while the Cranford Paving Company did the repairing and resurface work, under their five years' contract for repairing concrete pavements.

The Barber company have evinced during the past year a desire to lay as good a pavement as was in their power, irrespective of cost. They have improved their asphalt cement by substituting for a portion of residuum oil used an artificial asphalt, so to speak, which imparts to the asphalt cement the property of being less susceptible to changes of atmospheric temperature than when residuum oil alone is used. This artificial cement, or Pittsburg flux, as it is commercially called, was partly described in a former report. It is manufactured by heating petroleum residuum with sulphur. The sulphur combines with portions of the hydrogen of the petroleum and escapes as hydrogen-sulphide gas, leaving the product as a residue.

They have also used a sand in their surface mixture that is much finer than is called for in the specifications, which is an advantage for various reasons already discussed in former reports.

I intend during the coming year to recommend that the paving companies lay a pavement with a slightly softer asphalt cement. This will make the pavements less liable to cracking in cold weather, while they will still be sufficiently hard for summer.

WATER ANALYSIS.

A total of 69 analyses have been made for the water department during the past year, 45 being on water from deep wells and 19 from the old shallow wells. Two deep wells were abandoned because good water could not be obtained, and 1 is suspicious. The others make a very good showing.

The analyses of the 23 deep wells that have been sunk in the District during the past two years will be found below.

TABLE H.

[The total solids on evaporation were not determined in these wells, as the samples were taken immediately after being drilled.]

Location.	Depth.	Results in parts per million.					Chlorine.
		Nitrogen as—				Oxygen consumed.	
		Free am- mo- nia.	Albu- minoid am- mo- nia.	Nitrites.	Nitrates.		
	<i>Feet.</i>						
First and G streets NW.....	148	.003	.001	Trace.	None.	0.6	8
Sixth and B streets NW. <i>a</i>	140	.002	.004	None.	None.	-----	27
Sixth and O streets NW.....	192	.008	.005	Trace.	Trace.	-----	22
M street, between Fourth and Fifth streets NW.....	150	.006	.005	Trace.	None.	-----	11.5
Seventh and M streets NW.....	151	.002	.003	None.	None.	-----	10
Twelfth and M streets NW.....	149	.005	.002	None.	None.	-----	9
Eighth street and Florida avenue NW. <i>b</i>	103	.042	.018	.011	2	3.4	100
Eighth and Savannah streets NW.....	193	.002	.003	None.	Trace.	1.2	14
Twentieth street and Pennsylvania avenue NW.....	203	.008	.004	None.	Trace.	1.8	5
Third and H streets NE.....	155	.001	.002	Trace.	None.	.4	5
Twelfth and K streets NE.....	186	.002	.003	Trace.	None.	-----	6
New York avenue extended NE.....	175	None.	None.	None.	None.	-----	6
Eleventh and East Capitol streets NE.....	181	.004	.006	None.	2	3.1	3.5
Half and T streets SW.....	207	.008	.004	None.	Trace.	.5	8
Second street and Virginia avenue SW.....	146	.008	.008	None.	None.	-----	10
Third and D streets SW.....	96	.010	.020	None.	None.	-----	7
Fourteenth and D streets SW. <i>c</i>	247	1.+	1.+	.002	.006	Very high.	802
Second street and North Carolina avenue SE.....	232	.007	.004	None.	21	-----	8
Third and M streets SE.....	223	.008	.005	Trace.	6	-----	4
Tenth street and South Carolina avenue SE.....	147	.003	.002	None.	None.	-----	4
Fourteenth and C streets SE.....	149	.006	.005	None.	None.	-----	3
Stanton and Elven avenues.....	185	.005	.003	Trace.	None.	0.7	7

a Suspicious.

b Bad.

c Bad; abandoned.

The 24 waters from shallow wells were sent in on complaints of wells; 7 were bad and 4 suspicious. It is much to be regretted that the force of this department is too small to permit of a more extended examination of the shallow wells. Such wells are a great source of danger for causing and transmitting diseases, and if they are to be kept in use in the city several examinations of each should be made every year. These examinations need not be complete, but just sufficient to show any marked change in the analysis of the water.

Very respectfully,

A. W. Dow,

Inspector of Asphalt and Cements.

THE ENGINEER COMMISSIONER OF THE DISTRICT OF COLUMBIA.
(Through Capt. Lansing H. Beach.)

SPECIFICATIONS FOR ASPHALTIC MIXTURES AND TESTS FOR SAME.

By A. W. Dow, Washington, D. C.

The request is frequently made for a knowledge of the methods by which an asphalt suitable for street paving may be distinguished and for a practical set of specifications for an asphalt mixture. Little has been written and but little is known; but the enormous increase in paving streets with asphalt throughout this country in the last five years has made the subject one of general interest. In my effort to throw a little light on this subject I am hampered by the thought that practically everything is in the crude state of a beginning and that no standards have as yet been fixed for tests.

As there is at present some confusion as to the meaning of certain terms used in this article I feel it advisable to define their meaning as employed here.

Bitumen.—Any and all hydrocarbons, whether natural or artificial, soluble in carbon disulphide.

Asphaltum.—A natural bitumen, all or a portion of which is insoluble in petroleum naphtha, and in most cases found associated with various mineral and organic substances.

Asphalt.—Any and all natural deposits containing asphaltum.

Asphalt cement.—An asphalt or allied substance softened by some softening agent, or an asphalt of the proper consistency for use in paving. It may be more or less pure.

A properly constructed pavement should be composed of the three parts, base, binder, and wearing surface.

Base.—As in all pavements, the base should be given the closest attention. It is false economy to try to save on the base. It is well in the constructing of a pavement to consider that the base is the true pavement, and there is no reason why it should ever be reconstructed. The wearing surface is intended to take the wear and tear of traffic, and can be replaced on the same base times innumerable. It should be made of concrete of at least 6 inches in depth, on a well compacted bed, unless it should be desirable to lay a wearing surface on an old stone or macadam pavement. It is not, however, advisable to remove a stone pavement, lower the grade, replace the stones, and then lay on the wearing surface, as it is impracticable to relay the stone pavement with sufficient care to prevent parts of it from compacting more than others, which will in time produce depressions in the wearing surface.

Binder.—As the surface of the base is comparatively smooth and of such a character that the wearing surface would have no bond with it, it is found necessary to use what is called binder. This binder, as the name implies, is intended to bind the surface coat to the base, thus preventing it from shoving under traffic in warm weather while in a soft condition. It should be composed of angularly broken stone of varying sizes, mixed with soft asphalt cement.

Wearing surface.—It should be composed of a sharp-grained sand containing some dust, and an asphaltic bitumen. Too little importance in the past has been paid to the selection of sand and dust for asphaltic mixtures, and many failures have resulted therefrom which were considered due to other causes. I would not be far from right in saying that it is possible by varying the grade of sand and the quantity of dust to produce any character of pavement desired, without changing the bitumen. Indeed, the sand and dust are of as much importance in the making of a good pavement as the asphalt. In selecting a sand certain rules should be observed. It should be moderately fine, the grains varying in size from coarse to fine, the fine predominating. A good sand on sifting should give proportions somewhat similar to these:

	Per cent.		Per cent.
Retained on—		Retained on—	
10-mesh per inch sieve	0	80-mesh per inch sieve	10
20-mesh per inch sieve	12	100-mesh per inch sieve	18
40-mesh per inch sieve	25	Passing through 100-mesh per inch	
60-mesh per inch sieve	20	sieve	15

All the grains retained on a 60-mesh sieve must be hard, as it is desirable that they resist being crushed by traffic. This is very important, and a number of pavements have failed for no other reason than that the coarse grains were crushed, producing numerous small grains that were uncoated by bitumen. A proper grading of the sand from coarse to fine, with considerable fine, is desirable, as it permits the use of more and a softer bitumen. To understand the desirability of this it is well to remember that all bitumens harden by the fall of temperature, and that at some low degree they tend to be more or less brittle. If, now, so fine a sand be employed that the bitumen used may be so soft that the degree of temperature at which it would become brittle is below the minimum of atmospheric temperature, we can prevent our pavement from becoming brittle.

A round-grained sand is to be avoided, as it produces a much softer mixture than an angularly grained sand would, though the same bitumen be used with both. It is but seldom that a properly graded sand is found, and especially one containing the requisite quantity of fine grains. To overcome this difficulty, two or even more sands are often mixed, and more often some suitable dust is mixed

with it. This dust should be any inorganic substance unaffected by water. In the selection of a sand for a mixture the earthy matter of the asphalt cement must be considered as a part of the sand.

Bitumen.—Bitumen may be derived from various sources, as a suitable mixture of hard and soft asphalt: a hard asphalt, with an asphaltic oil; from an asphalt found naturally to contain a bitumen of proper consistency, or a hard asphalt softened with an artificial product. As there are practically no artificial bitumens used alone in street paving, I will only deal with those derived from natural origin, and of mixtures of natural and artificial products.

The necessary characteristics for a bitumen to possess are adhesiveness, cohesiveness, and elasticity to a certain degree. It must not show too rapid a change with aging; must be practically unaffected by water or dilute ammonia, and have a proper degree of consistency or softness. Its consistency should not be greatly altered by changes in temperature; and, lastly, a certain degree of stability upon being kept at a high temperature for a length of time.

If in the examination of an asphalt or like substance to determine its suitability for paving one finds that the bitumen contains the above properties, it will be safe to say that it will make a good pavement if properly manipulated.

METHODS EMPLOYED IN THE EXAMINATION OF ASPHALT CEMENT.

Determination of per cent bitumen, foreign organic and inorganic residue.—The per cent bitumen in a substance is determined by extracting it with a solvent, generally carbon disulphide. This extraction may be made in numerous ways. The method that I have found to give the least trouble and require the least experience is by extracting in large test tubes or cylinders. decanting off the solvent containing the dissolved bitumen from the insoluble portions.

The method of procedure is as follows: The asphalt, or like substance, is spread in a thin layer, in a suitable dish (nickel or iron will do), and kept at a temperature of 225° F. until it practically stops losing in weight. The greater part, and in some cases all the water and some light oils are expelled in this way. From 2 to 10 grams (depending on its richness in bitumen) of this substance is weighed in a large sized test tube (8 inches long by 1 inch diameter), the tare of which has been previously ascertained. The tube containing the substance is then filled to within $1\frac{1}{2}$ inches of the top with carbon disulphide and allowed to stand for a few minutes. Then the tube is tightly corked with a good sound cork. It is then shaken vigorously until no asphalt can be seen adhering to the bottom. Care should be taken while shaking to keep one finger on the cork to prevent its being blown out. The tube should then be put away in an upright position and not disturbed in the slightest way for two days, after which the carbon disulphide is decanted off into a small bottle. As much of the solvent should be poured off as is possible without losing any of the residue. The tube is again filled and shaken as before, and put away for two more days. After the liquid has been carefully decanted the second time, the tube, with the residue, is dried at a low temperature, and then 225° F. After cooling it is weighed. As there is always a small portion of the residue poured off in the solution with the bitumen, this solution must be evaporated and the bitumen burned off in a platinum dish and the weight of the residue added to that in the tube. The weight of the substance taken, less the sum of these two weights, is the weight of the bitumen extracted, from which can be calculated the per cent bitumen.

The determination of the organic matter, not bitumen, or, as it is often called, the foreign organic matter, is made by burning, in a tared platinum crucible, the residue left in the tube after extracting the bitumen. 100 per cent, less the sum of the foreign organic matter, and bitumen per cent is the organic matter.

The softness or consistency of a bitumen or asphalt cement is determined by an apparatus devised by Professor Bowen, which is generally spoken of as a penetration machine. This piece of apparatus has been described several times in print and is patented, so I will not enter into any details as to its construction. This determination is made by ascertaining the distance, registered in degrees on a dial, that a needle will penetrate into a bitumen in a fixed time and under a fixed weight. The penetration of a sample is taken by lowering the needle until it is just in contact with the surface. A clamp is then released, which allows the needle to penetrate into the sample for any fixed time (one second being the time generally allowed). At the end of this time the clamp is closed and the degree of penetration noted from the dial. All samples must be kept at a standard temperature for at least half an hour before making the test. This is most accurately done by keeping the machine and samples in a small room kept at the standard temperature.

Susceptibility to change in temperature.—This is determined by taking the penetration of the substance at several different degrees of temperature and noting its variation caused by the rise or fall.

Change due to age.—All bitumens undergo a more or less rapid change with aging, that appears to be due to two or possibly more causes. Two distinct changes manifest themselves. One is the surface hardening, which is likely due to indirect oxidation, and possibly to the volatilization of light oils. It begins at the surface and gradually extends into the bitumen. The other is a hardening of the entire mass, evidently due to polymerization. Both these changes take place in all bitumens, but one or the other may predominate. The former is much the less objectionable, as it makes but slow progress into the mass. It is preferable that this test be made on the asphalt cement, as there is some danger in using extracted bitumen of the solvent not having been entirely removed, and its slow evaporation might be interpreted as a true change, due to the hardening of the bitumen.

This test is made as follows: The penetration of the sample is determined, after which it is put away for a week, when it is again ascertained. If the sample has been found to have appreciably hardened, a slanting cut is made into it with a keen, sharp knife, laying over the upper piece, thus exposing a gradual descent from the surface into the interior of the cement. Penetrations are now taken down the side of this cut, beginning at the surface. In this way the increase in hardness of the surface and the interior over its original consistency is determined; also, the hardening of the surface over the interior and the depth that the surface hardening has entered the sample.

It is well to continue this test for as long a period as possible, making examinations at intervals of every few weeks.

Its stability upon being kept at a high temperature for a length of time.—The necessity of this stability is owing to the length of time the bitumen must remain in a heated condition during the course of the manufacture of the asphalt mixture, which may cause it to lose valuable properties. The effect of this heat is rendered much more severe on the bitumen because of its great area exposed to evaporation when mixed with sand.

The lack of stability resulting from the loss of light oils is manifest in different ways in different bitumens. Although generally so, it does not of necessity follow that the bitumen losing the most oil undergoes the greatest change in consistency. There are two methods of determining this, and it is advisable to use both. The first consists in making the asphalt cement into a mixture with standard sand. This is done by mixing sand and the asphalt cement in such proportions that the mixture will contain 10 per cent of bitumen. This is done by keeping in a hot oven for fifteen minutes at 300° F., and then incorporating by stirring the sand and asphalt. One portion of this mixture is then put aside to cool, while the other is kept at the temperature of 300° F. for one-half hour longer. The bitumen is then extracted from both, and after having arrived at the same temperature their penetrations are compared.

The second method consists in keeping a quantity of the substance, equivalent to 20 grams of bitumen, at the temperature of 400° F. for thirty hours. The method of procedure is as follows: The substance is weighed in a short-necked, tubulated, 2-ounce retort, the tare of which has been previously taken. The retort is then hung in a copper cylinder so that the neck just protrudes. The copper cylinder is then jacketed with asbestos and provided with a thermometer. After being heated up to 400° F., at which temperature it is kept for thirty hours, the retort is allowed to cool, then weighed, and the per cent of loss ascertained. The retort is then broken open and the character of its contents compared with that of the original substance.

The action of water and dilute ammonia on an asphalt mixture is determined by molding an inch cube of the mixture under a pressure of 1,000 pounds. The cube is broken in two, one portion being placed in water or dilute ammonia, while the other portion is kept in air. The two pieces are compared from time to time. If it be acted upon by the liquid, the corners will be found to give away readily with a slight pressure of the finger. After soaking some time, it is well to evaporate the liquid to dryness and note if any bituminous residue remains.

Adhesiveness, cohesiveness, and elasticity.—No method has as yet proved satisfactory for the determination of these other than the sense of feeling along with experience.

Extraction of bitumen for the purpose of examination.—The method which I employ (extraction by subsidence) is the same as employed for determination of the per cent of bitumen, only on a larger scale, and no accurate weighings are

necessary. Any method is applicable that will extract all the bitumen in a reasonably pure state. Sufficient of the material to give 20 grams of pure bitumen is put in a large glass cylinder, and extracted with carbon disulphide, as before described. The solvent containing the bitumen is evaporated off in a clean metal dish at a low temperature until it is quite free from the solvent. It is then heated cautiously to 300° F., at which temperature it is kept for ten minutes. This is necessary, as the last trace of solvent is very hard to remove.

As in the examination of all materials to fill certain purposes, some standard must be fixed. In the case of bitumens the knowledge is too limited and the methods too incomplete to fix numerical standards for the various tests; so it is necessary to establish for a standard the bitumen of some well-known asphalt cement. The bitumen generally taken as a standard is that of an asphalt cement composed of the best quality of Trinidad asphalt softened with petroleum residuum.

In the examination of asphalts or like products, to determine their suitability for paving, it is necessary that both the hard and softening material be examined, unless the asphalt be already of the right consistency. My method of procedure is as follows:

The materials are mixed together by heating in such proportions as would give a cement of the proper consistency, which is determined by its penetration. All tests are then made on this cement, or the bitumen extracted from it, except where the softening agent employed is injurious, when it must be examined and its quantity limited. I refer here especially to petroleum residuum, which is used for softening asphalts. I have made a careful study of this and am thoroughly convinced that the use of all petroleum residuum is injurious, some much more so than others. That it is not adaptable, either chemically or physically, to this use, can be readily seen by looking into its properties. With a change of but a few degrees of temperature it passes from a liquid to a solid state. On standing a month or two a hardening sets in, due either to polymerization or slow crystallization, which makes it even more susceptible to change in temperature. I am also led to believe, from various experiments, that many asphalts are not entirely soluble in petroleum residuum, and for that reason asphalt cement in which it is used is not a chemical, but merely a mechanical mixture or emulsion of the asphalt and the oil. From this it can readily be seen that the undesirable properties of the petroleum residuum are imparted to the asphalt cement to a degree proportional to the quantity of residuum used.

I have found that the best petroleum residuums comply with the following tests:

Specific gravity ranging between 20° and 23° Baumé.

The flash point (as taken in a New York State board of health oil tester, between 300° and 425° F.

On keeping at a temperature of 400° F. for thirty hours, as described in the tests on bitumen, it must lose between 2 and 6 per cent of oil. The residue in the retort should be fluid at 75° F., and on cooling should not show a coarse crystallization. The quantity of residuum necessary to soften the asphalt into a cement containing bitumen whose penetration is 80° (District of Columbia standard) should not be over 33 per cent of the total quantity of bitumen in the asphalt.

It must show only the slightest signs of having been cracked in the course of manufacture. An oil that has been cracked reveals on being examined through the microscope numerous black particles floating through it. The particles are insoluble in petroleum naphtha, but are soluble in carbon disulphide and resemble asphaltine.

In the specifications that I now present in this article I have tried to cover all excepting the limestone-rock asphalts, which are mostly foreign, and are objectionable on account of the poor foothold they afford to horses.

SPECIFICATIONS FOR ASPHALT WEARING SURFACE.

The wearing surface shall be made of an asphalt mixture complying with the following specifications:

The materials that shall be used therefor are:

1. Asphalt cement.
2. Sharp sand.
3. Fine mineral dust.

Asphalt cement.—The asphalt cement must not be inferior in quality to a cement made of the best quality Trinidad asphalt and petroleum residuum. This bitumen must comply with the following requirements: It shall be adhesive, cohesive, and elastic to a certain degree. It must not show too rapid a change with aging. It must be practically unaffected by water or dilute ammonia. Its penetration must

be within the range of 50° to 120° (District of Columbia standard). The penetration must be governed by the traffic, the range of atmospheric temperature, the susceptibility of the bitumen to change in temperature, and the character of the sand. Its consistency should not be greatly altered by a change in temperature. Its loss on being kept at 400° F. for thirty hours must be less than 8 per cent and its character must be so changed that its penetration is reduced to more than one-fourth of its original.

If petroleum residuum has been used as the softening agent, it must comply with the following requirements:

Specific gravity ranging between 20° and 23° Baumé.

The flash point (as taken in a New York State board of health oil tester) between 300 and 425° F.

On keeping at a temperature of 400° F. for thirty hours it must lose between 1½ and 5 per cent of oil. The residue in the retort shall be fluid at 75° F., and on cooling should not show a coarse crystallization. The quantity of residuum necessary to soften the asphalt into a cement containing bitumen whose penetration is 80° (District of Columbia standard) should not be over 33 per cent of the total quantity of bitumen in the asphalt.

Sand.—The sand shall be hard-grained and sharp. On sifting, it should have at least 15 per cent of material that would be caught on a 40-mesh per inch sieve, 25 per cent of material that will pass an 80-mesh per inch sieve, 10 per cent of which at least will pass a 100-mesh per inch sieve. If the sand to be used does not contain the desired fine material, any mineral dust unaffected by water may be used to make up the desired deficiency.

The proportions of materials used will depend upon their character and the traffic of the street, but the percentage of bitumen soluble in carbon disulphide shall not exceed the limit of 9 to 13 per cent.

In some of the methods of examination I have merely stated the processes that I have found preferable with the apparatus at my disposal. I am in hopes that this paper will call forth criticisms which will lead to discussion, and so bring forth the methods and ideas of others.

REPORT OF SUPERINTENDENT OF PROPERTY.

WASHINGTON, September 20, 1897.

SIR: I have the honor to submit the following report of the operations of this office for the fiscal year ending June 30, 1897:

The accompanying table (A) shows in detail the expenditures for construction materials from appropriations for the year. To this it may be proper to add the following remarks:

The greater part of curbing furnished was cut from an excellent quality of Maine granite. Two classes, the 6 by 20 inch and the 8 by 8 inch were used. The former is set in a trench, about 6 inches of its face being exposed. The latter class is embedded in concrete, and its use has generally been confined to streets improved with monolithic pavements. The specifications for the two classes are practically the same, requiring a fine grade of pean-hammered work with closely fitting joints. All curbing is beveled one-fourth inch. The prices paid were 65 and 64½ cents for the 6 by 20 inch, and 52½ and 51½ cents per foot for the 8 by 8 inch. The ruling prices for the preceding year were 74½ and 67½ cents, respectively. Circular curbing cost 82 and 67½ cents per foot, as against \$1.08 and 85 cents paid during 1895-96.

The District also purchased 519 feet of 6 by 20 inch and 1,768 feet of 8 by 8 inch Georgia curbing, at 58½ and 49 cents per foot, respectively. While this stone is of a somewhat inferior quality, it is believed to be suitable for curbing purposes, and, as it is a keen competitor for this market, its use seems advisable. No granite blocks were purchased during the year.

Vitrified paving blocks were supplied by three different contractors at \$20.85, \$21.75, and \$20 per M. These prices may be reduced to 89½, 92½, and 95 cents per square yard, respectively. The samples submitted with the proposal of one company were manifestly very poor. They represented, however, that they could and would furnish blocks equal to a standard to be determined by the Commissioners. The standing of this company being well known to the Commissioners, a contract was accordingly awarded and properly completed. Another contractor experienced much trouble in supplying blocks similar to specimens submitted with bid. A new standard was adopted, under which deliveries are now being prosecuted.

The division of contracts between two or more dealers seems advantageous to the District, as each contractor is careful that his product is not surpassed by that of the others.

The samples submitted with bids were not subjected to any series of tests. It was formerly the practice to immerse, grind, and tumble all such samples, but the foundry rattler used in determining the abrasion is no longer available, nor is there another in this city. These tests were found to be unreliable. Bricks of different species differ largely in results and some arbitrary rating seems necessary to cover such differences. Moreover, some bidders undoubtedly select specimens with a view to high results, which could not obtain with the run of bricks supplied under contracts. Again, it is not practicable to submit bricks as delivered to these elaborate tests. It therefore seems that the eye and ear of the inspector are the only practicable criteria. The inspector should, however, thoroughly familiarize himself with the material to be inspected, and the best, if not the only satisfactory way to do this, is by a close examination of similar brick in actual use.

Seventy thousand sidewalk paving bricks were purchased of the Frederick Brick Works at \$8.90, delivered in the District of Columbia property yard. The cost of hauling to work is about \$1.25 per M. All other sidewalk bricks were purchased under contracts with local dealers, the prices being \$8 and \$9 for bricks delivered within city limits, with increased charges for longer hauls. Nine dollars and fifty cents for (Frederick) bricks delivered in the District of Columbia property yard was the contract price during the preceding year. Red sewer bricks were supplied at the works of a local contractor at \$5.90 per M, and were hauled to the work in District teams.

Asphalt paving blocks used in alley pavements cost \$55 M, \$8 less than was paid during 1895-96. These blocks were of local manufacture. The large reduction in price is likely due to the competition of the vitrified paving blocks. The area of alleys improved during the year was about evenly divided between these two materials.

Vitrified sewer invert bricks were purchased for \$15.50 per M, the ruling price during the preceding year being \$15. The increase in size, however, more than offset the additional cost. These bricks, which are really selected pavers, are purchased by the District, and supplied to sewer contractors at prices recited in their contracts.

The vitrified sewer invert blocks supplied during the year were of local manufacture and cost 39½ cents per linear foot. During 1895-96 Ohio River fire-clay blocks were purchased at 50 cents per foot.

The annual contract for supplying terra-cotta sewer pipe and branches was awarded to the lowest bidders, tied items going to local manufacturers. The only successful out-of-town bidders, Robinson Bros. & Co., of Akron, Ohio, declined to execute contract for the sizes awarded them (21 and 10 inch pipe and branches), claiming that they should have received a proportionate award of tied items. The local bidders then agreed to furnish the pipe in question at the prices bid by Robinson Bros. & Co., and contracts were let accordingly. All pipe supplied was therefore of local make. The prices were 24-inch, 49 and 50 cents; 21-inch, 35 cents; 18-inch, 25½ and 26 cents; 15-inch, 18½ and 19 cents; 12-inch, 12½ and 13 cents; 10-inch, 10 cents; 8-inch, 7 cents; 6-inch, 4½ and 5 cents; 24 by 6 inch branches, \$2.20; 21 by 6 inch branches, \$1.57; 18 by 6 inch branches, \$1.15; 15 by 6 inch branches, 85 cents; 12 by 6 inch branches, 58 cents; 10 by 6 inch branches, 45 cents; 8 by 6 inch branches, 30 cents; 6-inch bends, 15 cents. These prices range from 30 to 40 per cent lower than those of the preceding year. Sewer pipe has never been subjected to any tests.

The contract for furnishing natural hydraulic cement was awarded to the Lawrenceville Cement Company, these contractors being the first in many years to regularly supply rosendale cement for use in the construction of District sewers. A quantity of Cumberland, Cumberland and Potomac, and Roundtop cements were furnished under this contract. The price was 71 cents per barrel delivered at the District of Columbia warehouse in canvas sacks. No barreled cement was purchased. The 1895-96 price was 73½ cents for the same class of deliveries.

Portland cement was supplied by James H. McGill, at \$2.09 per barrel. His contract as originally made provided for the furnishing of Hanover (German) or Brooks, Shoolbridge & Co. (English) brands, in the option of the District. An amendment to this contract included Atlas (American) cement. Mr. McGill claimed that this amendment transferred the option to him. His claim was not admitted, and cement was furnished as ordered.

Castings were purchased of local contractors, at \$1.40 per 100 pounds, 3.8 cents less than the 1895-96 price. Wrought-iron manhole steps cost 9½ cents each.

The sand used for paving and concreting was dredged from Occoquan Creek,

and cost 45 cents per cubic yard, 1 cent more than was paid during the preceding year. This is the best sand that reaches this market, but, unfortunately, the beds show some signs of exhaustion. Screened sand used for brickwork came from various points on the Lower Potomac and cost 63 and 65 cents; 60 cents was the 1895-96 price. Screened pebbles were dredged from the Virginia side of the Potomac opposite Washington and cost 59 cents, 5 cents more than was paid during the preceding year.

Building stone came from the quarries on the Upper Potomac, the average cost being \$1.75 per perch.

Four 8-inch Miller siphons were purchased at a cost of \$28 each, f. o. b., Chicago. The freight amounted to \$6.90.

The pitch furnished during the year was of domestic make, and cost 7½ cents per gallon.

The various lighting supplies were purchased under contracts prepared by the lighting division, this office simply assuming the custody of the goods and the settlement of the accounts.

A new floor was laid in the western half of the larger cement house, at a cost of \$394. The yard adjoining this house was inclosed by a dressed white pine fence, the expense being \$85.86.

A recent order of the Commissioners has charged this office with the purchase of all supplies used in the engineer department. Some changes have been made in the manner of keeping records, but as this charge is of such recent date comment as to its advantage would seem premature.

Table B, forwarded herewith, shows in detail payments to employees (other than two inspectors of property on annual roll; also one messenger part of year).

Respectfully submitted.

L. T. BOISEAU,

Superintendent of Property.

The ENGINEER COMMISSIONER, DISTRICT OF COLUMBIA.

(Through Capt. Lansing H. Beach, U. S. A., Assistant.)

TABLE A.—Showing construction materials purchased from appropriations for 1896-97.

Appropriation.	Granite curbing.		Asphalt block.		Asphalt tiles.		Vitrified paving block.	
	Feet.	Cost.	Num-ber.	Cost.	Num-ber.	Cost.	Num-ber.	Cost.
Improvements and repairs.....	25,055.77	\$14,646.41	32	\$1.76			262,539	\$5,598.41
Assessment and permit work.....	29,598.83	17,798.62	319,285	17,612.63	410	21.52	855,340	17,047.49
Constructing county roads.....	4,223.57	2,591.28						
Current repairs, streets, avenues, and alleys.....	130.97	107.40	2,350	145.25			61,596	1,312.27
Repairs to concrete pavements.....	349.10	215.92					165,485	3,486.10
Replacing sidewalks and curbs around public reservations.....	715.31	383.79						
Replacing obstructed sewers.....			100	5.50				
Pumping expenses and pipe distribution.....			381	20.96				
Extension of high service system.....	20	10.50					8,700	189.23
Repairs to market house.....			2,545	139.97				
Fire department.....	174.23	101.19	18,500	1,049.38			150	3.26
Deposits, etc.....	38	31.16					1,550	33.71
Total.....	60,305.78	35,886.27	343,193	18,975.45	410	21.52	1,355,300	28,270.47

176 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

TABLE A.—Showing construction materials purchased from appropriations for 1896-97—Continued.

Appropriation.	Vitrified paving brick.		Vitrified sewer brick.		Iron pipe.		Pitch.	
	Number.	Cost.	Number.	Cost.	Feet.	Cost.	Gallons.	Cost.
Improvements and repairs.					a 78	\$15.62		
Assessment and permit work.					b 392	89.66		
Constructing county roads.							550	\$55.00
Current repairs, streets, avenues, and alleys.	15,068	\$218.49					1,930	144.75
Bridges.						435.34	200	14.00
Main and pipe sewers.			88,251	\$1,367.88			125	9.37
Suburban sewers.			100,000	1,550.00			100	7.50
Replacing obstructed sewers.								
Cleaning and repairing sewers and basins.			50,000	775.00	23	13.88	50	3.75
Rock Creek and B street intercepting sewers c.			187,951	2,888.25				
F street and Easbys Point sewer a.			78,880	1,222.64				
Brookland sewer c.			281,986	4,303.78				
Eckington sewer c.			100,607	1,559.41				
Kenesaw avenue sewer c.			40,220	604.05				
Pumping expenses and pipe distribution.							1,540	115.50
Fire department.	2,900	45.24						
Deposits, etc.	2,549	39.77			14	3.89	3,440	252.99
Total	20,517	303.50	927,895	14,271.01	507	558.39	7,935	602.86

Appropriation.	Iron beams.		Lead pipe.		Building stone.		Invert block.	
	Feet.	Cost.	Pounds.	Cost.	Cubic yards.	Cost.	Feet.	Cost.
Assessment and permit work.					374	\$28.19		
Constructing county roads.					502	878.50		
Main and pipe sewers.					5	9.50	1,8554	\$732.92
Suburban sewers.							2,646	1,026.90
Cleaning and repairing sewers and basins.							1154	45.62
Automatic flushing tanks.			73	\$9.43				
Rock Creek and B street intercepting sewer c.	176	\$500.23			274	47.70	150	59.25
Brookland sewer c.							3,423	1,352.00
Eckington sewer c.							255	127.50
Kenesaw avenue sewer c.							2,2424	1,067.05
Total	176	500.23	73	9.43	574	963.89	10,6874	4,441.33

Appropriation.	Red paving bricks.		Red sewer brick.		Sewer pipe.		Portland cement.	
	Number.	Cost.	Number.	Cost.	Feet.	Cost.	Barrels.	Cost.
Improvements and repairs.			27,300	\$161.07	234	\$27.81	104	\$21.94
Assessment and permit work.	913,934	\$7,661.06	254,430	1,490.57	32,638	4,084.39	6804	1,421.90
Constructing county roads.	26,500	251.75	4,750	28.03	1,746	232.98	324	67.92
Current repairs, streets, avenues, and alleys.	617	4.94	1,400	8.26	15	1.95	1034	216.84
Repairs to county roads.					231	39.03		
Repairs to concrete pavements.								
Replacing sidewalks and curbs around public reservations.			12,500	73.75	126	13.68	24	5.22
Bridges.	27,666	239.00	1,400	8.26			20	11.80
Main and pipe sewers.	2,000	13.00	224,750	1,325.97	192	72.24	5	10.45
Suburban sewers.			43,150	251.08	24,461	4,679.27	3244	677.68
Replacing obstructed sewers.	5,238	36.67	70,250	494.11	11,569	2,723.45	400	836.00
Cleaning and repairing sewers and basins.					12,701	2,139.41	3	6.27
			143,388	857.87	880	116.63	1754	367.32

a Includes four 4-inch "P" traps and four 4-inch "cesspools."

b Includes 200 taps for vent traps.

c Shows total amount of purchases to date.

TABLE A.—Showing construction materials purchased from appropriations for 1896-97—Continued.

Appropriation.	Red paving bricks.		Red sewer brick.		Sewer pipe.		Portland cement.	
	Number.	Cost.	Number.	Cost.	Feet.	Cost.	Barrels.	Cost.
Automatic flushing tanks			7,888	\$46.53	98	\$8.10	8	\$16.72
Rock Creek and B street intercepting sewer <i>a</i>			14,800	87.32	1,596	381.27	444½	922.77
F street and Easby's Point sewer <i>a</i>					846	52.26		
Brookland sewer <i>a</i>			2,850	16.82	1,494	589.77	968	2,011.24
Eckington sewer <i>a</i>					285	165.75	330	684.66
Sewer in Fifteenth street extended <i>a</i>			4,000	23.60	570	60.15		
Kenesaw avenue sewer <i>a</i>			8,200	48.38	59	9.13	150	297.32
Pumping expenses and pipe distribution					150	7.50	40	83.60
Extension of high-service system							243	507.87
Schools	8,667	\$69.33						
Fire department							2	4.18
Deposits, etc	2,100	18.90	7,250	42.77	410	34.84	7½	16.20
Total	986,722	8,294.65	8,283.06	4,973.39	90,391	16,330.61	3,950½	8,217.90

Appropriation.	Natural cement.		Sand.		Pebbles.		Lumber.	
	Barrels.	Cost.	Cubic yards.	Cost.	Cubic yards.	Cost.	Feet. B. M.	Cost.
Improvements and repairs	90½	\$64.26	506½	\$231.93	96½	\$56.75	9,158	\$67.77
Assessment and permit work	4,325½	3,071.68	4,457½	2,051.33	3,630½	1,788.04	636,426	1,010.50
Constructing county roads	600	425.92	221½	126.41	348½	205.22	5,490	145.04
Current repairs, streets, avenues, and alleys	474½	337.04	1,002	451.30	180½	106.40		
Repairs on county roads	6	4.26	1½	.67	101	59.59	3,559	152.76
Repairs to concrete pavements	35½	25.20	13½	7.65	6½	3.74		
Replacing sidewalks and curbs around public reservations	38½	27.33	69½	31.25	20½	12.20		
Bridges	155	110.05					c293,028	6,002.31
Main and pipe sewers	5,611½	3,962.58	648½	323.67	1,134½	669.35	12,326	207.02
Suburban sewers	3,915½	2,779.88	40	26.00	719½	424.21	d83,006	336.12
Replacing obstructed sewers	1,070	761.45	71½	46.07	781	461.28	8,280	101.07
Cleaning and repairing sewers and basins	995	709.62	115½	74.40	235½	138.75	e 19,575	310.74
Automatic flushing tanks	75½	54.62	25	12.85	29½	17.51	186	3.41
Rock creek and B street intercepting sewers <i>a</i>	4,724	3,337.21	47½	23.18	36	20.94	3,177	34.98
F street and Easby's Point sewer <i>a</i>	3,467	2,483.29	3	1.35			16,926	313.13
Brookland sewer <i>a</i>	6,527	4,788.27	59½	26.95	112½	66.48		
Eckington sewer <i>a</i>	2,494	1,862.74						
Sewer in Fifteenth street extended <i>a</i>	59	41.89	19½	8.08	31	18.29		
Kenesaw avenue sewer <i>a</i>	950½	670.16	12½	7.10	11½	6.69	1,044	17.86
Pumping expenses and pipe distribution	614½	439.36	212½	95.71	23	13.58		
Extension of high-service system	47	33.37	17½	7.88	2	1.18		
Purchase and repair of pumps	2	1.42	1	.45				
Lighting	22	15.79	10½	4.73				
Repairs to market house			6	2.70				
Schools	98	f 69.58	16	7.20				
Fire department	83	58.93	54	24.45	3½	1.97		
Preservation public order	1	71	½	.15	½	.39		
Deposits, etc	2,255½	1,617.90	1,008½	455.20	66½	40.91		
Total	38,737½	27,784.51	8,640	4,048.66	6,970½	4,113.47	492,271	8,702.71

a Shows total amount of purchases to date.

b Includes 48 cedar posts, 1 window sash, and 430 palings.

c Includes 20 cedar posts.

d Includes 1,000 stakes.

e Includes 12 hickory poles.

f Includes cost of 45 cement sacks.

TABLE A.—Showing construction materials purchased from appropriations for 1896-97.—Continued.

Appropriation.	Castings.					Lighting supplies.					
	Manhole frames.	Manhole covers.	Alley grates and frames.	Ventilator traps.	Manhole steps.	Cost.	Lamp posts.	Lanterns.	Signs.	Miscellaneous.	Cost.
Improvements and repairs.		3			7	\$4.92					
Assessment and permit work.	222	222	2	29	1,400	1,002.72					
Current repairs, streets, avenues, and alleys.		1	1			5.87					
Repairs to concrete pavements.	2	3	4		16	31.39					
Bridges.	29	55			472	190.94					
Main and pipe sewers.	119	163	28		619	819.70					
Suburban sewers.	41	41			323	204.22					
Replacing obstructed sewers.	60	60			350	287.24					
Cleaning and repairing sewers and basins.	78	122	107		150	a 920.42					
Automatic flushing tanks.	5	5			25	23.43					
Rock Creek and B street, intercepting sewer <i>b</i> .	13	13			280	136.48					
F street and Easbys Point sewer <i>b</i> .					100	9.62					
Brookland sewer <i>b</i> .	25	25			230	127.98					
Eckington sewer <i>b</i> .					80	7.77					
Sewer in Fifteenth street extended <i>b</i> .	3	3			23	14.76					
Kenosaw avenue sewer <i>b</i> .	4	4			40	21.65					
Lighting.							251	300	1,015	178	\$3,257.55
Deposits, etc.	5	5			37	24.63					
Total.	606	725	142	29	4,152	3,923.74	251	300	1,015	178	3,257.55

Appropriation.	Bluestone basin tops, etc.				Siphons.	Repairs.	Renting.
	Traps.	Drip stone.	Cheek blocks.	Cost.			
Improvements and repairs.	3			\$51.70			
Assessment and permit work.						\$14.40	
Repairs to concrete pavements.		1	2	2.70			
Main and pipe sewers.	12	21	42	259.50			
Cleaning and repairing sewers and basins.	10	22	42	242.75	c \$12.20		
Automatic flushing tanks.					d 118.90		
Rock Creek and B street intercepting sewers c.			6	30.00			
Rent of property yards.							\$300.00
Total.	25	50	86	586.65	131.10	14.40	300.00

a Includes 1 iron saddle sleeve.

b Shows total amount of purchases to date.

c Includes "flushing gear."

d Includes \$6.90 freight.

e Shows total amount of purchases to date.

OPERATIONS OF THE ENGINEER DEPARTMENT, D. C. 179

TABLE A.—Showing construction materials purchased from appropriations for 1896-97—Continued.

Appropriation.	Testing.	Hauling.	Traveling.	Services.	Total.
Improvements and repairs		\$107.74	\$43.70	\$1,074.50	\$22,176.29
Assessment and permit work		3,374.43		2,943.00	84,111.13
Constructing county roads		151.03		205.00	5,364.08
Current repairs, streets, avenues, and alleys		128.57		41.50	3,230.83
Repairs to county roads		32.40		50.00	329.71
Repairs to concrete pavements				150.00	4,015.35
Replacing sidewalks and curbs around public reservations				50.00	793.63
Bridges		3.37			6,838.70
Main and pipe sewers	\$5.00			850.00	15,942.41
Suburban sewers		44.25		650.00	10,852.11
Replacing obstructed sewers				315.00	4,661.57
Cleaning and repairing sewers and basins		81.24		270.00	4,940.19
Automatic flushing tanks					311.50
Rock Creek and B street intercepting sewer <i>a</i>		1.01		380.00	8,850.59
F street and Easbys Point sewer <i>a</i>				120.00	4,232.29
Brookland sewer <i>a</i>				335.00	13,618.38
Eckington sewer <i>a</i>				270.00	4,677.83
Sewer in Fifteenth street extended <i>a</i>					166.77
Kenesaw avenue sewer				25.00	2,804.39
Pumping expenses and pipe distribu- tion					776.21
Extension of high-service system		22.77			772.80
Purchase and repair of pumps					1.87
Lighting					3,278.07
Repairs to market houses					142.67
Schools					146.11
Fire department		3.00			1,291.60
Rent of property yards					300.00
Preservation public order					1.25
Deposits, etc.				50.00	2,662.87
Total	5.00	3,949.81	43.70	7,779.00	207,261.20

a Shows total amount of purchases to date.

TABLE B.—Showing list of employees other than those on per annum roll and amounts paid to each.

Name and occupation.	Wages.	Im- prove- ments and repairs.	Assess- ment and permit work.	Sewers.	Repairs to concrete pave- ments.	Current repairs to streets, avenues, and alleys.
L. T. Boiseau, superintendent of prop- erty	\$4.75	\$228.00	\$498.75	\$617.50	\$57.00	-----
J. E. Payne, clerk	4.00	208.00	449.50	528.00		-----
W. J. W. Grey, clerk	3.00	147.00	331.50	405.00	9.00	-----
Wm. Donaldson, inspector	4.00	160.00	472.00	520.00	48.00	-----
W. H. Voss, inspector and storekeeper	3.00	120.00	354.00	387.00	36.00	-----
H. M. Dickinson, inspector and store- keeper	3.00	156.00	345.00	390.00		-----
J. P. Jennings, inspector and storekeeper	2.50	32.50	132.50	55.00		-----
Ed. Morris, inspector and messenger	2.00		130.00	258.00		\$11.50
J. T. Loulan, inspector	2.50	5.00				-----
G. M. Thomas, inspector	2.50		61.25	1.25		-----
J. A. Neville, inspector			58.50			30.00
J. D. Biting, inspector	2.50		2.50			-----
Carpenters	3.00	18.00				-----
Laborers	{ 1.50 1.75 }		107.50	53.25		-----
Total		1,074.50	2,943.00	3,215.00	150.00	41.50

180 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

TABLE B.—*Showing list of employees other than those on per annum roll and amounts paid to each—Continued.*

Name and occupation.	Wages.	Constructing county roads.	Repairs to county roads.	Replacing side-walks and curbs around public reservations.	Deposit and assessment fund.	Total.
L. T. Boisseau, superintendent of property.....	\$4.75	\$85.50	-----	-----	-----	\$1,486.75
J. E. Payne, clerk.....	4.00	-----	-----	\$2.00	\$50.00	1,237.50
W. J. W. Grey, clerk.....	3.00	39.00	-----	-----	-----	931.50
Wm. Donaldson, inspector.....	4.00	-----	\$50.00	2.00	-----	1,252.00
W. H. Voss, inspector and storekeeper.....	3.00	42.00	-----	-----	-----	939.00
H. M. Dickinson, inspector and storekeeper.....	3.00	18.00	-----	21.00	-----	930.00
J. P. Jennings, inspector and storekeeper.....	2.50	-----	-----	-----	-----	220.00
Ed. Morris, inspector and messenger.....	2.00	3.50	-----	11.00	-----	414.00
J. T. Loulan, inspector.....	2.50	3.75	-----	-----	-----	8.75
G. M. Thomas, inspector.....	2.50	-----	-----	-----	-----	62.50
J. A. Neville, inspector.....	-----	-----	-----	-----	-----	88.50
J. D. Bitting, inspector.....	2.50	-----	-----	-----	-----	2.50
Carpenters.....	3.00	-----	-----	-----	-----	18.00
Laborers.....	{ 1.50 1.75}	13.25	-----	14.00	-----	188.00
Total.....	-----	205.00	50.00	50.00	50.00	7,779.00

FIRST DIVISION.

Capt. EDWARD BURR,

Corps of Engineers, United States Army, Assistant to the Engineer Commissioner, in charge.

WATER DISTRIBUTION	W. A. MCFARLAND, <i>Superintendent, Water Department.</i>
WATER RATES.....	JOHN J. BEALL, <i>Water Registrar and Chief Clerk, Water Department.</i>
STREET LIGHTING	H. D. MANKIN, <i>Superintendent of Lamps.</i>
ELECTRIC WIRES AND CONDUITS.....	W. C. ALLEN, <i>Inspector.</i>
INSPECTION OF GAS AND METERS.....	S. CALVERT FORD, <i>Inspector of Gas and Meters.</i>
BUILDINGS AND BUILDING INSPECTION	J. B. BRADY, <i>Inspector of Buildings.</i>
	E. F. VERMILLION, <i>Inspector of Elevators.</i>
SURVEYOR'S OFFICE.....	H. B. LOOKER, <i>Surveyor, District of Columbia.</i>
PARKING COMMISSION	TRUEMAN LANHAM, <i>Superintendent of Parking.</i>

REPORT OF ASSISTANT IN CHARGE.

OFFICE OF THE ENGINEER COMMISSIONER,
DISTRICT OF COLUMBIA,
September 30, 1897.

CAPTAIN: I have the honor to submit the following report upon the operations of the division under my charge for the fiscal year ending June 30, 1897:

This division includes the general supervision of water distribution, water rates, street lighting, electric conduits and overhead wires, inspection of gas and meters, building inspection and construction and repair of municipal buildings, surveyor's office and subdivision of land, and parking commission.

WATER DISTRIBUTION.

The maintenance of an ample supply of water for the District of Columbia, for its buildings and grounds, and for the use of its citizens, is a divided responsibility. The supply system, consisting of the Washington Aqueduct with its reservoirs and the original large mains leading from the distributing reservoir into the city, was provided by the United States to furnish water for its public buildings and grounds, and is under the charge of its officers. The use of any water in excess of that requisite for its own needs was freely granted by the United States to the citizens of the District of Columbia. With the increase in population in the District and in the amount of water used by its citizens and by the United States, portions of the original system proved of insufficient capacity, and necessary increases and improvements have been made in part or wholly at the expense of the District. The means for distributing the water to the private consumer,

including pumping to the higher levels, have been provided by the District of Columbia, and this service, together with the collection of revenues for its maintenance and extension, is under the control of the Commissioners.

The supply system, in so far as relates to the maintenance of an adequate supply of water in the distributing reservoir, is, by reason of recent improvements, in condition to meet all legitimate demands that may be made upon it for some years to come. The mains provided for delivering water from the distributing reservoir, three miles west of the White House, to the city have been at times in the past and now are of capacity insufficient to fully meet the demands made upon them. The present overtaxed condition of these mains causes very considerable losses of pressure, with a resulting insufficient supply of water on the higher levels. Careful inspections made on the lines of the large supply mains indicate a marked and general decrease from the pressures existing in 1890, when the supply was in as good condition as could be reasonably expected with the present system of distribution from a reservoir located four miles from the center of the area to be supplied. In the higher areas, more particularly on Capitol Hill and in the northwest, the pressure has never been more than sufficient to give a fair service, and a loss of from 7 to 14 feet of pressure means that in such localities the third floors of most houses will be without water the greater part of the time, and the second floors of many houses will have only an intermittent supply. The present conditions are little better than those existing in 1889, before the last increase of the water supply made by laying the 48-inch main. Where the deficiency in supply is confined to a single locality, relief may be and has been had from temporary expedients, such as the readjustment of valves. Such means have been employed to hold up the pressure on Capitol Hill and in other localities, but no further relief of complaints of insufficient water service can be expected from these expedients. The existing general deficiency in the water service can only be remedied by increasing the amount of water brought into the city or by reducing the excessive waste.

INCREASE OF WATER SUPPLY.

While the pressures in the large supply mains have decreased since 1890 as much as from 7 to 14 feet in the higher localities, the water level in the distributing reservoir has been fully maintained during the past year. In fact the aqueduct has delivered into the reservoirs more water than the mains could bring into the city and the excess has been wasting over the sluiceway of the receiving reservoir. The aqueduct and headworks are now in condition to deliver into the reservoirs sufficient water to meet all legitimate demands for many years. The mains leading from the distributing reservoir into the city are now taxed beyond their proper capacity, and although there is an ample supply in the reservoirs, no increased supply can be had within the city until the tunnel conduit, or a substitute therefor, is completed.

The tunnel conduit was carefully examined in the previous year by a commission composed of the ablest experts on such constructions in this country. This commission strongly favored the completion of the tunnel and the Howard University reservoir as the best and most economical means of furnishing an increased supply of water. It can not be too urgently recommended to Congress that, in order to increase the supply and maintain the pressure in the higher areas, the resump-

tion of work upon the tunnel be authorized immediately. The work should be pushed to completion with all the speed consistent with its proper execution, since, under the most favorable circumstances, its completion will require at least two years. Much discomfort, distress, and danger are now continually experienced on account of the inadequacy of the present system to meet the demands made upon it, and existing conditions become more aggravated with increasing population and demands for water.

The Washington water supply is provided by a gravity system, the water being drawn from the Potomac River at Great Falls and flowing by gravity alone through the aqueduct, reservoirs, and mains without the employment of pumps to increase the pressure in the low service, in which about 90 per cent of the water is used. For the service of the higher levels, about 10 per cent of the supply is pumped from the low-service mains. The dam at Great Falls is placed 150.5 feet above datum (mean high water at the navy-yard) and the water level of the distributing reservoir is 146 feet. A pressure of 30 pounds, sufficient to deliver water, say, 60 feet above the street, is considered the minimum for a fair domestic service, and with no loss of pressure from friction in the mains, such service could not be had in the low service at any point higher than 85 feet above datum. Large areas of the best residence sections of Washington, including Capitol Hill and all of the northwest section west of New Jersey avenue and north of New York and Massachusetts avenues, are from 75 to 90 and 100 feet above datum, and evidently can hardly receive a fair water service even under the most favorable conditions. This distributing reservoir is located, as the mains run, about 3 miles from the White House and Dupont Circle, $4\frac{1}{2}$ miles from Fourth and R streets NW., 6 miles from the Capitol, and 7 miles from Lincoln Park. With supply mains of such lengths the loss of pressure must be considerable even under normal conditions. Even after the last increase in the supply in 1890, the pressures on East Capitol street were only from 15 to 20 pounds and in the northwest but 15 to 27 pounds. At the present time the average pressure on East Capitol street is less than 15 pounds and in the northwest is from 12 to 22 pounds, insufficient to supply water to the second floors of many houses during portions of the day. The loss of head or pressure from the reservoir to Fourth and R streets NW. is 20 feet, and to East Capitol and Fifth street is 25 feet. The saving of this great loss of pressure will immensely improve the service and can only be properly and permanently effected by bringing the source of supply, i. e., the reservoir, nearer to the center of the population to be served. The completion of the Howard University reservoir and of the tunnel conduit (or of some other conduit of equal capacity) will maintain without loss of head a full supply in close proximity to the higher levels, an end not to be gained by any other means. As is evident from the pressures on Capitol Hill in 1890, the laying of the 48-inch main did not increase the pressure to the amount that is necessary for good service, and the laying of additional mains of that size will not do so now. Whether the waste of water is to be reduced or not, the tunnel conduit should be completed for the maintenance of pressures throughout the city and of an ample supply of water in all sections.

WATER WASTE.

The present unsatisfactory state of the water supply is due largely to waste. This term is used in contradistinction to water consumption,

as applied to all uses of water from which benefit of any character results. All water department officials concur in advocating a free use of water for all purposes conducive to the comfort, safety, health, and convenience of the people in their homes or their business, but all are strongly opposed to allowing water to waste into sewers to no useful end whatever. It is not economy in the use of water that is desired. The stoppage of absolute and unnecessary waste is all that is advocated.

The following table shows the consumption and waste of water in the District of Columbia for each year from 1880 to 1897, both inclusive. The total consumption and waste for each year is taken from the reports of the officers in charge of the Washington Aqueduct and the population from United States and police census reports:

Year.	Total.	Per capita.	Estimated population.	Remarks.
	<i>Gallons.</i>	<i>Gallons.</i>		
1880.....	25,740,138	145	177,638	U. S. census.
1881.....	26,525,991	145	182,893	Estimated.
1882.....	29,727,964	158	187,968	Do.
1883.....	24,314,715	126	193,133	Do.
1884.....	24,827,113	125	198,198	Do.
1885.....	25,219,194	124	203,459	Police census.
1886.....	25,542,476	122	208,358	Estimated.
1887.....	26,878,424	126	213,357	Do.
1888.....	29,115,774	133	218,157	Police census.
1889.....	27,708,779	123	225,309	Estimated.
1890.....	35,541,845	153	232,460	U. S. census.
1891.....	38,594,743	160	248,539	Estimated.
1892.....	41,161,780	156	264,618	Police census.
1893.....	46,727,108	170	267,569	Estimated.
1894.....	49,162,357	181	270,519	Police census.
1895.....	47,182,681	173	272,667	Estimated.
1896 <i>a</i>	44,113,574	165	274,815	Do.
1897 <i>a</i>	45,267,046	164	276,963	Police census.

a Mean of two measurements.

The population stated in this table is that of the entire District, and includes suburban and rural population entirely without water facilities, amounting to not less than 6 per cent of the total. The per capita consumption and waste for the urban population and so much of the suburban as is supplied with water is correspondingly greater than that stated.

Considerable variation will be noticed in the total consumption and waste, due to the fact that the figures given are from only one, or at most two, measurements, and that the use and waste of water varies materially with the weather conditions. Variations in the estimated per capita consumption and waste are due to the facts just stated, and also to probable inaccuracies in estimates as to the population. A fairly accurate view of the per capita consumption and waste may be had by selecting from the above table the data for the years previous to 1892, in which a United States or police census was taken and for all years subsequent to 1892:

	Gallons.		Gallons.
1880.....	145	1893.....	170
1885.....	124	1894.....	181
1888.....	133	1895.....	174
1889.....	123	1896.....	160
1890.....	<i>a</i> 153	1897.....	164
1892.....	156		

a 48-inch main completed.

These figures show a gradual decrease in the per capita use of water from 1880 to 1890, due to an increasing demand and a stationary supply. With the completion of the 48-inch main in 1890, the per capita shows a sudden increase to 153 gallons, and then a further gradual increase to 181 gallons in 1894. The per capita decrease since 1894 is due to some cause not apparent in the above tables, as is evident from the fact that the total consumption and waste have decreased since 1894 with an increase in the population and number of premises supplied. An explanation will be offered later.

The above figures represent the demand for water under normal summer conditions. The following table shows the figures under conditions of normal and of maximum, but not unusual, consumption and waste in winter and summer. The maximum summer demand shows the amount wasted as well as legitimately used for irrigating purposes, all drawn in a few hours of the twenty-four. The maximum winter demand shows the additional and entirely useless waste caused by allowing water to run from fixtures in order to prevent the freezing of pipes. It is this latter and utterly inexcusable waste that causes the greatest complaint of insufficient water supply.

Date.	Consumption and waste.		Temperatures.			Weather.
	Total.	Per capita.	Maximum.	Minimum.	Mean.	
1897.	<i>Gallons.</i>	<i>Galls.</i>	<i>Deg.</i>	<i>Deg.</i>	<i>Deg.</i>	
Jan. 24.....	42,250,000	153	34	14	24	Cold.
25.....	44,450,000	160	16	9	12	Do.
26.....	52,800,000	191	24	8	16	Do.
27.....	52,100,000	189	24	16	20	Do.
28.....	52,350,000	189	18	9	14	Do.
29.....	52,700,000	190	26	14	20	Do.
30.....	51,250,000	185	30	9	20	Do.
31.....	53,700,000	194	36	10	23	Do.
Feb. 1.....	51,850,000	187	38	12	25	Do.
2.....	50,550,000	186	38	32	35	Moderate.
June 23.....	45,282,915	164	85	62	74	Moderate; not dry.
30.....	45,251,178	164	84	67	76	Do.
Aug. 11.....	48,722,354	176	97	66	82	Warm and dry.

The above figures are for the entire District, including those portions supplied by the middle and high service. Similar data from the middle service, to which is pumped about 10 per cent of the total supply, show similar conditions, although the per capita rates are lower than for the entire supply, due to its being a purely residence section, with little or no use of water for governmental or business purposes, and to the more modern and better condition of the mains and plumbing.

The following table shows the total and per capita consumption and waste in the middle service, with a population estimated at 35,280, or 8.64 persons for each tap or premises supplied with water:

Date.	Consumption and waste.		
	Total.	Per capita.	Per tap.
May, 1897, average per diem.....	<i>Gallons.</i> 4,208,500	<i>Gallons.</i> 119	<i>Gallons.</i> 1,032
June, 1897, average per diem.....	4,536,800	128	1,112
July, 1897, average per diem.....	4,695,400	133	1,150
August, 1897, average per diem.....	4,870,000	138	1,193
June 23, 1897.....	4,282,500	121	1,059
June 30, 1897.....	4,158,000	118	1,002
September 11, 1897.....	5,161,500	146	1,265

For the low-service area, with a population estimated at 225,228, or 5.27 persons per tap or premises, the rates per capita and per tap for June 23, 1897, are, respectively, 181 and 960 gallons.

The per capita use of water in this city, even under normal conditions, is so large as to lead to but one conclusion—that a large percentage of it is wasted and performs absolutely no useful service. In cold weather the custom of permitting fixtures to run in order to avoid the freezing of exposed pipes adds largely to the already excessive waste, and casual inspections show an excessive use and waste for sprinkling purposes in warm dry weather.

In the past it has been the almost universal custom when the water supply of a city became unequal to the demands made upon it to proceed, at a large expense, to increase the supply by enlarging the works. Of late years, with a rapidly increasing per capita demand, and in many instances a limited available supply, much attention has been given to reducing waste—avoiding expensive extensions of works and increasing pressures by conserving the supply already available.

Experienced water-supply engineers and officials differ somewhat as to the proper and allowable per capita consumption under varying local conditions, but all are practically agreed that a maximum of 100 gallons per capita is ample under any circumstances and includes a liberal allowance of water for domestic, commercial, and other purposes, with a considerable percentage for waste. In all cases anything in excess of 100 gallons, and in most instances much of this 100 gallons, is careless, deliberate, and willful waste.

Mr. Dexter Brackett, C. E., for many years identified with the water supply of Boston, has prepared two able and comprehensive papers upon the consumption and waste of water. The first appears in the report of the Massachusetts State board of health upon a water supply for the Boston metropolitan district and the second in the Transactions of the American Society of Civil Engineers, Vol. XXXIV, 1895, with the views of other able and experienced members of the society. It is regretted that space will not permit the insertion here of liberal extracts from these papers.

The following table and quotations are, however, of such importance by reason of the facts they contain, the results of actual measurements and long experience in the water service of a large city, as to make their insertion here necessary:

Consumption, per capita, for domestic use in Boston, Brookline, Newton, Fall River, Worcester, and London, England, as determined by meter measurement.

City or town.	Number of houses.	Number of families.	Number of persons.	Consumption.		Remarks.
				Per family.	Per capita.	
Boston	31	402	1,461	<i>Galls.</i> 221	<i>Galls.</i> 59	Highest cost apartment houses in the city.
Do.	46	628	2,524	185	46	First-class apartment houses.
Do.	223	2,204	8,432	123	32	Moderate-class apartment houses.
Do.	39	413	1,844	80	16.6	Poorest-class apartment houses.
Do.	339	3,647	14,261	139	35.6	Average of all apartment houses supplied by meter.
Do.	40	-----	1,699	-----	46.1	Boarding houses.
Brookline	-----	828	4,140	221.5	44.3	Average of all dwellings supplied by meter.
Newton	490	490	2,450	132.5	26.5	All houses supplied with modern plumbing.
Do.	-----	619	3,065	-----	6.6	These families have but one faucet each.

Consumption, per capita, for domestic use in Boston, Brookline, Newton, Fall River, Worcester, and London, England, etc.—Continued.

City or town.	Number of houses.	Number of families.	Number of persons.	Consumption.		Remarks.
				Per family.	Per capita.	
Newton.....		278	1,390	<i>Galls.</i> 34.5	<i>Galls.</i> 6.9	These families have but one faucet each.
Fall River.....	28	34	170	127.5	25.5	The most expensive houses in the city.
Do.....	64	148	740	42	8.4	Average class of houses generally having bath and water-closet.
Worcester.....		20,514	90,942		16.8	Whole domestic consumption.
Do.....		81	327	80.2	19.9	Woodland street, best class of houses.
Do.....		37	187	118.1	23.4	Cedar street, best class of houses.
Do.....		93	447	95	19.8	Elm street, houses of moderate cost.
Do.....		245	1,104	55.1	12.2	Southbridge street, cheaper houses.
Do.....		229	809	55	15.6	Austin street, cheaper houses.
London, England.	1,169		8,183		25.5	Houses renting from \$250 to \$600, each having bath and two water-closets.
Do.....	727		5,089		18.6	Middle class; average rent, \$200.

From a study of the preceding facts the author draws the following conclusion in regard to the actual requirements of different communities: The quantity needed for domestic use is not more than 30 gallons per inhabitant, and in communities where the number of water fixtures is small in proportion to the population supplied a smaller quantity will answer all requirements. For business, mechanical, and manufacturing use the amount per capita will differ very largely in different cities, and for various reasons. It is not probable, however, that the actual requirement at present exceeds 40 gallons per capita in any of our large cities.

The quantity needed for public use is not more than 5 gallons, making a total of 75 gallons as the maximum quantity needed for actual use, without any allowance for waste.

* * * In Chicago, Cleveland, Philadelphia, and Detroit the consumption is about 150 gallons, of which probably one-half is wasted.

This waste can be attributed to the following causes: First, defective plumbing; second, defective street mains and services; third, waste to prevent freezing of services; fourth, willful waste.

The experience of the author leads him to be of the opinion that it is not practicable to reduce the waste below 15 gallons per capita in our large cities, and that it can not be maintained at that figure except by the universal use of water meters aided by Deacon meters or some similar device for detecting leaks in street mains. In cities where water meters are not generally used the quantity wasted will be from 20 to 100 gallons per capita, as the inspection of mains and house fixtures is more or less rigid.

While no data can be given from actual measurements by meters of the amount of water used in Washington for various purposes or wasted to no useful end, a study of the daily and hourly amounts of water supplied bear out remarkably well in many respects the statements of the authority just quoted. For this city the per capita consumption for domestic purposes should be about 30 gallons, as estimated above. From the known character of the city, it is to be expected that the per capita for commercial and manufacturing purposes will be relatively small as compared with other cities of the like size (in Boston 40 gallons is estimated for this purpose), and that the total for all uses other than domestic should be less than in a commer-

cial city. The following table is based on the reports of the Washington Aqueduct and of the high service pumping station:

Consumption and waste.

Consumption and waste.	High service.		High and low service.			
	Average, June 24 and 30.	Sept. 11.	Average, June 24 and 30.	Sept. 11.	Jan. 24.	Jan. 31.
	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>	<i>Gallons.</i>
Total	4,220,000	5,161,000	45,267,000	48,722,400	42,250,000	53,700,000
Minimum for 1 hour	144,600	163,500	1,377,400	1,524,500	-----	-----
Maximum for 1 hour	241,500	291,000	2,251,000	2,513,500	-----	-----
Per capita total	120	146	164	176	153	194
Per capita rate:						
Minimum	98	111	120	132	-----	-----
Maximum	164	198	196	218	-----	-----

June 24 and 30 were two normal days of moderate summer temperature, in a period when, on account of showers, little or no water was used for sprinkling purposes. September 11 was a hot day in a dry period, with the probable maximum use of water for sprinkling. January 24 was a normal winter day, and January 31 occurred toward the end of a cold period, when the waste by running water to prevent freezing of service pipes and fixtures was at its maximum.

The minimum for one hour is the smallest single hour's consumption and waste during the twenty, and represents the amount of water supplied hourly from 11 p. m. to 4 a. m. During these hours the actual use of water practically ceases, especially in residential sections, and any large supply may be accounted for only as waste. The above table shows that under ordinary conditions of weather the consumption and waste during the midnight hours in the High Service is at the rate of 81 per cent of the daily supply, and in the whole city is at the rate of 73 per cent of the total daily supply. No more positive indication of excessive waste could be cited.

The High Service supplied a section that is purely residential, with practically no use of water for commercial or governmental purposes. There can therefore be no question as to the amount of water used in this service for United States buildings and grounds. It is all used for municipal and domestic purposes. Under normal conditions (June 24 to 30) the total per capita rate is found to be 120 gallons, and the per capita rate for the hours between midnight and 4 a. m. is found to be 98 gallons. Considering the residential character of the section supplied by this service, it is safe to assume that the midnight rate for water *used* is not more than 5 gallons per capita and that the other 93 gallons of the 98 are wasted. If the waste is at the rate of 93 gallons and the total consumption and waste is 120 gallons, the consumption proper is but 27 gallons per capita, and may be assumed to be used entirely for domestic purposes, since the quantity used for municipal purposes is probably less than 2 gallons. As this rate covers a population of 35,000 and the best sections of the city, it may be assumed as the actual legitimate use for domestic purposes for the entire city.

For the whole District, under normal conditions (June 24 to 30), the total consumption is 164 gallons and the minimum hourly rate is 120 gallons. A liberal assumption that 10 gallons of the latter is used shows a waste of 110 gallons and a legitimate use of 54 gallons, of which (as estimated above) 27 gallons is for domestic purposes and

27 gallons for all other commercial, municipal and governmental purposes.

The consumption on September 11 as compared with June 24 to 30 shows a minimum use for sprinkling purposes of 12 gallons per capita for the District. For the High Service alone it is 25 gallons.

The figures for January 24 and 31 are interesting, as showing the enormous daily waste of water (11,450,000 gallons total, 41 gallons per capita), from allowing fixtures to run in cold weather to avoid freezing. When added to the normal, regular waste, it is not surprising that the higher localities are short of water during cold waves and for some days thereafter.

A résumé of the above figures as to per capita use of water is:

	Gallons.
For domestic purposes 27, or say.....	30
For commercial and United States purposes 27, or say.....	30
For sprinkling (maximum) 12, or say.....	15
Total maximum legitimate use	75

Add for waste, not deliberate or willful, 25 gallons, and the total is 100 gallons per capita, or 28,000,000 gallons a day. With such an allowance and supply of water there would be ample for all purposes—domestic, commercial, and public. There would be no necessity for stinting or economy in any legitimate use of water. All that is necessary is the suppression of careless, deliberate, and willful waste, due to defective plumbing, known or unknown, and positive personal violations of regulations in opening fixtures to allow water to run continuously.

There is but one means to fully control and suppress such waste—the general extension of the meter system to all classes of consumers, domestic as well as commercial. Until this means is adopted periodical shortages in the water supply of this city must be expected, not because the supply of water is insufficient for all legitimate uses, but because 70 per cent of it is wasted and serves no good end whatever.

That the general introduction of meters will accomplish this end without hardship, increased cost to consumers, insanitary conditions or any curtailment of the proper use of water, there can be no doubt. The opinion of all authorities and the experience of all communities where the meter system has been generally introduced leads to this belief. By the use of meters is obtained a suppression of waste, a uniformity of water rates according to the amount of water used or wasted, and an increase of pressure with a general improvement of the service without the expenditure of large sums for enlargements of works.

To illustrate the benefits of the meter system it is necessary to refer to but one city, Detroit, with about the same population as the District of Columbia. The following quotations are taken from a statement made by Mr. L. N. Case, Superintendent of the Detroit Water Works, before a committee of the Legislature of the State of Michigan, having under consideration what is known as the “free water bill” for Detroit:

There has been found but one really efficient restriction to waste, and that is the meter, although assessing upon the basis of consumption as estimated is partially so. * * *

For years, and up to 1889, Detroit, Buffalo, and Philadelphia operated upon the assessment plan entirely. Detroit pumped a daily per capita supply of 204 gallons. Our capacity was more than exhausted, and complaints of short supplies were bitter and increasing. March 6, 1889, I demonstrated to the Board that meters must be used to stop this enormous waste or an enlargement of the works

entered into immediately at an estimated expense of \$600,000. The introduction of meters was decided upon. The following conditions of the three cities in 1887 and 1896 will show the results of the introduction of meters in Detroit and the continuance of the old method in Buffalo and Philadelphia:

Daily pumpage in million gallons.

	Buffalo.	Philadel- phia.	Detroit.
1887.....	38	88	36
1896.....	101	239	36
Increase in population.....per cent..	34	46	56

Detroit, at the same rate of increase of Buffalo and Philadelphia, which corresponded exactly with her increase previous to using meters, would have pumped 101,000,000 gallons daily. This would have required an expenditure of over \$200,000 for engines and pipes more than was expended and an extra expense for pumping water of \$94,900 for last year, with a proportionate increase for the intervening years.

* * * * *

One-third increased pressures!

The result in Detroit is a stationary total consumption for ten years, with a 56 per cent increase in population and a per capita decrease from 203 to 130 gallons. This was accomplished by metering about 5,000 consumers of a total of 49,000, and while the effect is marked the per capita supply still shows large waste that can be reduced by increasing the number of meters.

In this city (Washington) the increase in the use of meters has produced a similar but no less marked effect. The existing law requires the use of meters only by hotels, livery stables, manufacturing establishments, and other large consumers. Since 1894 all such consumers have been required to use meters. The following table shows the result:

	1894.	1895.	1896.	1897.
Number of premises supplied.....	44,185	45,675	46,908	48,540
Number of meters.....	202	231	574	777
Water supplied.....gallons..	49,162,000	47,182,000	44,114,000	45,267,000
Per capita.....do.....	181	173	165	164

With an increase since 1894 of 4,355 in the number of premises supplied with water the total daily supply is reduced by about 4,000,000 gallons and the per capita supply from 181 to 164 gallons. This can be attributed to no other cause than the metering of about 500 large consumers of the character mentioned above.

As the law now stands, no further extension of the meter system can be made, since all premises excepting dwellings and small shops are metered. To further curtail waste, meters must be gradually applied to all consumers. It is the current belief that the excessive consumption here arises from large use and waste of water in the United States buildings and grounds. While undoubtedly there is some waste in the departmental buildings, there are good grounds for believing that it is very much less than suspected, and that the waste is largely due to defective plumbing, and willful, deliberate, or careless waste in dwellings. The High Service, as above stated, supplies a purely residential section composed largely of modern houses, and served through comparatively new mains and services. The

natural expectation would be for a smaller rate of waste than for the whole city. On the contrary, the percentage of waste, as shown by the water supplied from midnight to 4 a. m., is noticeably larger than for the Low Service containing the business section and a much larger proportion of older houses, plumbing, services, and mains. The unavoidable conclusion is that there is more waste in the residential section and in dwellings than in business or commercial premises, and that the United States Departments, though, as stated earlier, entitled by law to use or waste as much water as they desire, in fact do not waste as much or at the same rate as the resident population.

This waste can be reached and corrected only by meters. House-to-house inspection has been found to avail little, besides being extremely offensive to citizens. It has been found impracticable to correct leaks and waste except by cutting off the water, a very harsh measure, and only to be resorted to in exceptional cases. It is the numerous but very small leaks that cause the great waste, and to cut off the water for such would entail many hardships and bitter complaints.

The water meter makes each householder an inspector of the most effective kind, besides detecting leaks unknown to the consumer and not to be found by an inspector. An instance will illustrate: The second quarterly bill rendered after placing the meter in a hotel in this city produced a vigorous complaint of excessive charge and of incorrect meter. After retesting the meter to satisfy the consumer, a series of all-night readings showed such a large midnight registration as to indicate a large waste. With some difficulty the waste was located, and the average daily use was reduced from 53,800 to 32,400 gallons. Without doubt water is wasting in many similar cases of hidden leaks without the slightest benefit to anyone, and such wastes will continue until the use of the meter makes it to the interest of the consumers to seek out and correct their causes.

From other points of view the use of the meter is desirable or necessary. It is not practicable or possible to so rate by any scheme of assessment as to charge each consumer, even approximately, correctly for the amount of water used. All assessment or flat rates are based upon the size of the building, number and character of fixtures, number of occupants, or some similar data. The amount of water used does not necessarily bear any relation to any of these, and the waste of water certainly does not. It is inconsistent and unjust to rate a modern house with first-class plumbing and no appreciable waste on the same basis as a rookery with fixtures leaking continuously and left to run every cold winter night to avoid the freezing of exposed pipes. And yet all assessment schedules give two such houses the same rating, provided they are of the same size or comply equally with some other arbitrary requirement. Such conditions exist in every city. Every assessment schedule bears inequitably and gives rise to many complaints that can be met by only one answer—by the meter system, and no other; consumers pay for what they use and waste, neither more nor less. The sale of water should be conducted upon the same sound business principles as govern the sale of gas, provisions, or any other commodity, bearing in mind always that the proper use of water is to be encouraged. To deliver water throughout a city requires large expenditure. It can never be free, but must be paid for in one way or another, and there is neither justice nor sense in compelling one householder to pay for more than he uses in order that his extravagant, careless, or law-breaking neighbor may pay for less than he uses and wastes.

Another and more serious consideration presents itself. While the quantity of water available in the Potomac River is far beyond the immediate demands of the city, the capacity of the aqueduct is limited, and is probably not more than 75,000,000 gallons a day. With a supply equal to all demands, the use of water increased from 27,700,000 in 1889 to 49,100,000 in 1894, an increase of 21,400,000 gallons in five years. The increase from 1889 to 1890 was nearly 8,000,000, or 30 gallons per capita. When the supply is again increased, as it must be shortly if the present system continues, a similar increase in total and per capita demand is to be expected. Washington, Buffalo, and Philadelphia represent the extreme conditions of water waste. In Washington, from 1889 to 1894, the annual increased demand was 17 per cent, and in Buffalo and Philadelphia it was 18 and 19 per cent, respectively, between 1887 and 1896. With an increased supply it is safe to assume that the present conditions may again recur in five years, and certainly in ten years, when the capacity of the present aqueduct will be reached. Unless a short-water supply is to be accepted as a chronic condition in this city, the waste of water must be curtailed or measures should be at once undertaken for the duplication of the aqueduct from Great Falls to the reservoirs at an expense of millions of dollars. Is there any sound reason why millions should be spent by the city and the United States to bring an increased supply of water into the city for no other purpose than to return it again to the Potomac River through the sewers without benefit of any kind?

Excessive waste has a vital bearing upon the probability of filtration. Potomac water in the past has borne a good reputation for purity, but of late years has been suspected of pollution. With increasing population in the Potomac watershed and increasing liability to pollution, filtration is now necessary for the assurance of pure water. The cost of a plant, including all land and appliances, to supply 50,000,000 gallons of filtered water daily will not be far from \$1,000,000, upon which interest at 3 per cent and sinking fund requirements for extinguishment of the indebtedness in twenty years will be \$80,000 a year. The officer in charge of the Washington Aqueduct, in his report for 1896, states the cost of operation of filtration plants to be alone from about \$4 to \$8 per million gallons, that is, at the lower figure, \$73,000 for 50,000,000 gallons daily, a total for interest and sinking funds and operating expenses of say \$150,000 a year. For a daily supply of 30,000,000 gallons, more than ample for all the present needs of this city, the cost of plant and the annual expense would be reduced to \$600,000 and \$90,000, respectively. Is it not absurd to invest \$400,000 more than necessary and increase the annual expense by \$60,000 to no purpose except to waste filtered water into the sewers to no possible good, and are not the probabilities of obtaining the smaller plant greater than for providing the larger? Moreover, filtered water costs much more than the unfiltered, and this increased cost must be met by the consumers, probably in the form of increased water rates or rents. The people themselves must furnish the \$60,000 a year or more that is wasted into the sewers.

The general popular opposition to the use of water meters is fully recognized. The public official who, notwithstanding such opposition, does not fully place before the public the facts with regard to the great and entirely useless waste of water in this city, fails of his duty, particularly in view of the general misapprehension as to the utility of such waste and the effect of the meter system. This opposition is based upon the assumption that such waste is of value in pro-

moting cleanliness and better sanitary conditions in flushing closets and sewers; that the meter will tend to restrict the free use of water to the detriment of the public health and comfort, and that the greatest waste is in the Government buildings. None of these grounds is believed to be well taken.

From data compiled by the aqueduct office, based in many cases on the assumption that the Departments are using water continuously to the full capacity of the mains and pipes that supply them, it is found that the amount of water used in Government buildings is relatively small. The municipality uses much the largest part of the water delivered by the Aqueduct and, as the figures quoted above of the consumption in the High Service clearly show, the proportion of waste is greatest in residential sections. All business premises covered by existing law are now metered and no further reduction of waste in that direction can be expected.

The greater portion of the waste in dwellings is from leaking closets and fixtures, through which there is a continuous small flow. That such flow is insufficient and useless for flushing purposes is evident, from the fact that all modern closets flush with a large flow suddenly released from a tank. The old type of fixture, flushing only with the flow from the pipes, even running full capacity, is tabooed, and its use is prohibited by all sanitary authorities. It is well known that a steady small flow in the public sewers has no flushing effect, and that such sewers must be flushed periodically by heavy stream directed through catch basins or by a large quantity suddenly released from automatic tanks. The following table, compiled at random from information at hand, shows that no tangible relation exists between per capita supply of water and health conditions, as indicated by death statistics. While there may be slight errors in the following data, the figures are practically correct:

City.	Gallons per capita.	Death rate. <i>Per cent.</i>	Population, 1896 (esti- mated).
Buffalo	300	13.26	335,709
Philadelphia	172	20.17	1,525,000
Washington	164	20.96	278,150
Albany	160	21.61	100,000
Detroit	130	14.28	320,000
Atlanta	125	16.61	110,000
New York	123	20.86	1,995,000
Yonkers	85	21.11	36,000
Lowell	80	21.85	87,000
Pawtucket	72	18.30	33,704
Rochester	68	13.51	170,000
Newton	63	17.53	28,280
Syracuse	61	15.76	100,000
St. Paul	60	9.25	155,000
Kansas City	60	17.02	150,000
Providence	57	19.93	148,334
Fall River	37	22.46	98,000

Buffalo, with the largest per capita water supply, has a low death rate, but St. Paul has a much lower rate with a per capita water supply of only one-fifth that of Buffalo. Evidently other conditions than a large waste of water determine the death rate, as, for instance, purity of supply, obtained by filtration if necessary.

The effect of the meter system, properly applied, is not to cause undue economy in the use of water, but to restrict unnecessary waste. A free use of water is desired and should be encouraged, more particularly in the poorer class of dwellings and tenements. This can be

and is accomplished by establishing in all cases a minimum rate, that must be paid irrespective of the amount of water used. While this rate would be lower than the ordinary schedule or assessment rate, it would permit, without extra charge, of the liberal use of water for all necessary purposes in the class of dwellings where undesirable economy might be practiced. Waste, and waste only, would be an extra charge in such cases. In the better class of dwellings no undue economy is to be feared, and waste from leaking fixtures and from permitting fixtures to run incessantly would continue only so long as the consumer was willing to pay for the water. In any case, he would pay only for his own consumption and waste and for no part of his neighbor's.

It is proposed to place and care for all meters at the expense of the Water Department. Good service can be had only by municipal ownership of the meters, and to require the consumer to provide and care for the appliance by which his supply of water is measured is unreasonable. The expense of this work can be met from the current funds of the Department without increased appropriation, and it would be the intention to apply the system gradually as such funds were available for the purpose, placing meters first in premises in which waste was known or suspected.

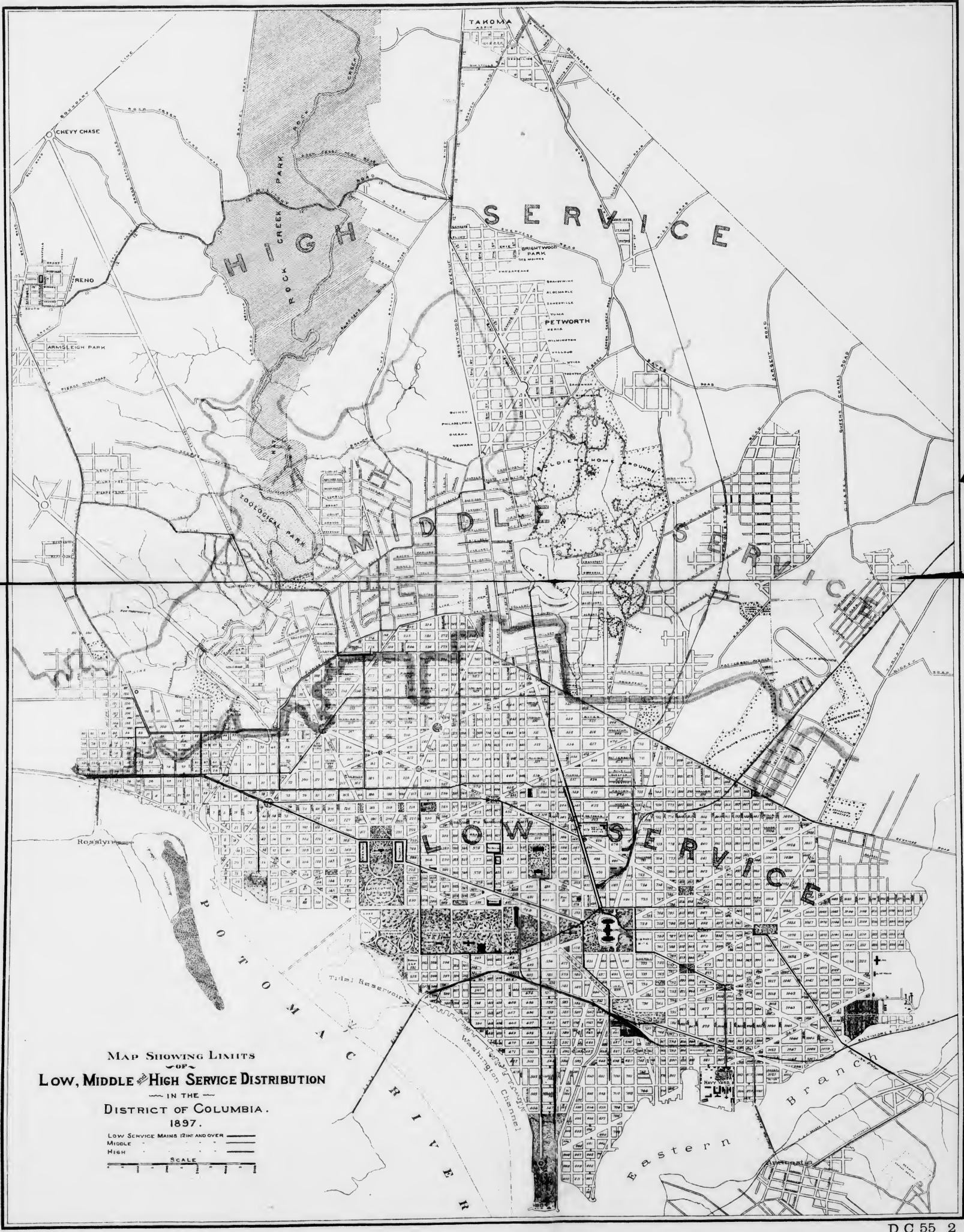
There would be no increase in water rates to provide additional funds. In fact, the experience of other cities, notably in Detroit, would incline toward a prediction of a reduction in rates in the course of time. A minimum rate of 75 cents a quarter, or \$3 per annum, would probably be adopted, a reduction of 50 cents from the present minimum schedule rate. Upon a consumption of 75 gallons per capita, which would be reached only in the very best classes of houses with a most liberal use of water for all purposes, the charge for water would amount to about 80 cents per capita per annum, with the additional advantage of quarterly payments after the water is used.

WORK DURING PAST FISCAL YEAR.

During the year 94,015 feet of water mains were laid, including 2,180 feet of 20-inch, 6,877 feet of 12-inch, and 71,266 feet of 6-inch pipe, the remainder being of the smaller sizes. Of the mains laid, 36,198 feet were in the Middle and High Service, 50 fire hydrants were erected, and the numerous ordinary repairs were made in all parts of the system. Full particulars as to the size, location, and cost of new mains, hydrants, etc., will be found in the report herewith of the Superintendent of the Water Department, to which reference is made for all of the details of the work of the year.

In this connection it seems proper to invite attention to the valuable service rendered by Mr. W. A. McFarland, Superintendent of the Water Department, and the inadequacy of the salary attached to his office. This officer has been in the District service less than a year, and in the cost of labor of laying mains alone has, with the efficient assistance of the foreman, Mr. John Fitzgerald, saved to the department \$9,800 on the amount of work done, as compared with the cost of similar work during the previous year. The salary of the Superintendent (\$1,800 per annum) is entirely insufficient to long retain the services of a man competent to fill the position, and should be increased to \$2,400, to at least place it on an equality with other positions in the city of equal size pays as little as \$2,400 to such an official. It should be noted that, in addition to his regular duties, the Superintendent rendered efficient service to the Commissioners in other directions.





MAP SHOWING LIMITS
OF
LOW, MIDDLE & HIGH SERVICE DISTRIBUTION
IN THE
DISTRICT OF COLUMBIA.
1897.

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MIDDLE AND HIGH SERVICE.

About 90 per cent of the water furnished in the District of Columbia is supplied by gravity to the Low-Service area. The distributing reservoir for this area has a water level of 146 feet above mean high water, and gives a fair service when the mains are not overtaxed to localities as high as 100 feet above datum. Under conditions such as exist at present, with the supply mains overtaxed, the service in all localities between 85 and 100 feet above datum is at times very inadequate. Much of Georgetown, a small portion of Washington, and the greater part of the District of Columbia lie above the level of 100 feet above datum, and for these areas the supply of water has to be pumped. A considerable part of the northwest section of Washington lies between 85 and 100 feet above datum, and in this area under present conditions the water supply from the gravity system is precarious. At times it is inadequate on account of the overtaxing of the 18-inch main and the resulting loss of pressure. The middle service has during the past year been extended to include some small portions of this area, and with increased pumping and reservoir facilities it is expected to make further extensions in the future, and until the general supply of water is increased or waste decreased.

On account of the great variation in the elevation of the different parts of the District of Columbia the pump service of water distribution has been divided into a High and a Middle Service. The High Service is intended to supply those areas of the District which lie above the level of 210 feet above datum, and the Middle Service those areas between the levels of 100 and 210 feet above datum. The Middle Service area covers much of Georgetown, a part of Washington, and the suburban districts between Rock Creek and the Soldiers' Home and to the eastward of the Soldiers' Home. Population and improvements are rapidly increasing in this area, with an increasing demand for water facilities.

Until recently two pumping stations have been maintained for supplying this area. The Georgetown station was closed in 1893, although held in readiness for emergencies, and the entire area is now supplied from the pumping station on U street, between Sixteenth and Seventeenth streets NW. All pumping plant for the High-Service areas will be concentrated at this station, and increased as the demand grows.

The act of March 3, 1893, and subsequent acts making appropriations for this department have appropriated for extending the High-Service system of water distribution so much as may be available in the water fund after providing for the other expenditures authorized in the same acts. Under these appropriations much-needed extensions and improvements in the High-Service system have been made. The High or Reno Service is now in excellent condition, with ample capacity in force mains, pumps, and reservoirs for some years to come. With the completion of the 8,000,000-gallon engine under contract the same may be said of the Middle Service extension as to the reservoirs. The only reservoir on this service is a small one at Thirty-second and F streets, Georgetown, the property of the United States and under the control of its officers. This reservoir has not sufficient capacity, holding only about six hours' supply, and is too low for good service for all points of the system. Although kept filled as a small reserve, it is sent out of the service. A reservoir at about elevation 265 above datum, with 30,000,000 gallons capacity, is much needed as a precaution against stoppages in the service from accidents to mains or pump-

ing machinery. The funds for the construction of such a reservoir are available, but the only suitable site is within the limits of Rock Creek Park, and can not be occupied without Congressional action. The necessary legislation will be requested during the coming session.

The 8,000,000-gallon engine contracted for during the previous year with the Barr Pumping Engine Company, of Philadelphia, has been completed, and run, more or less, in regular service. The capacity of the 5,000,000-gallon Nordberg engine has been increased to 7,000,000 gallons daily. The old 2,500,000 Gaskell engine has been converted for use in the High or Reno Service with a capacity of about 1,200,000 gallons daily. A small shop has been fitted up at the pumping station with machine tools sufficient to make all small repairs to pumping machinery and other plant, and many small improvements have been made.

Details of the routine work of the Department, including tables showing the pumpage in the High and Middle Services, will be found in the report of the Superintendent. The pumpage in both services has increased considerably during the year on account of the extension of High-Service mains to Tacoma Park and other points heretofore without water facilities, and to the extension of the Middle Service so as to include considerable areas of Low Service in which the pressure was insufficient to furnish a fair supply.

REVENUE AND INSPECTION BRANCH OF THE WATER DEPARTMENT.

The following statement shows the receipts and expenditures of the Water Department for the fiscal year ending June 30, 1897:

Financial statement for fiscal year 1896-97.

RECEIPTS.

Water tax:		
Current tax.....	\$48,512.13	
Advertised tax.....	2,429.48	
		\$50,941.61
Interest:		
On current tax.....	1,006.48	
On advertised tax.....	805.30	
		2,711.78
Water rent.....		253,500.16
Water taps for service.....		5,157.00
Water for building purposes, etc.....		1,128.28
		313,138.83

EXPENDITURES.

Salaries.....		36,371.25
Contingent expenses.....		2,528.68
Refunds, water rents.....		780.14
Pumping expenses and pipe distribution.....		687,920.27
High service.....		86,794.66
Interest and sinking fund on account of increasing water supply.....	\$13,640.75	
Interest and sinking fund on account of water-stock bonds.....	40,927.06	
Interest and sinking fund on account of Fourteenth street and 48-inch mains.....	7,457.00	
		62,024.81
Total interest and sinking fund.....		
Interest and sinking fund on account of increasing water supply:		
Interest.....	\$2,710.11	
Sinking fund.....	3,831.54	
		6,541.65
Total expenditures.....		276,428.81
Water tax levied during the year.....		63,473.98
Water-tax arrears June 30, 1897, amount collectible.....		158,471.06
Total amount standing to credit of water fund June 30, 1897.....		97,153.32

a Of this amount \$616.95 was paid on account of 1896.

b Of this amount \$2,533.37 was paid on account of 1896.

c This item of \$6,541.65 was not advanced to the Treasurer United States until after the close of fiscal year and is not included in expenditures.

OPERATIONS OF THE ENGINEER DEPARTMENT, D. C. 197

Comparative statement of revenues.

Fiscal year	Water-rents.	Water-main assessments.	Taps.	Permits, etc.	Total revenues.
1885	\$188,528.20	\$20,578.88	\$3,402.00	\$3,076.00	\$145,585.17
1886	124,886.22	36,162.04	5,066.00	3,459.63	169,613.29
1887	138,539.49	47,183.24	6,012.00	4,846.45	196,581.18
1888	171,802.49	34,284.85	4,182.00	4,809.92	215,149.26
1889	189,407.39	46,280.58	5,190.00	5,576.16	246,454.13
1890	197,653.34	45,386.55	5,313.72	6,327.95	254,681.56
1891	209,664.29	50,332.93	5,640.00	6,889.79	272,497.01
1892	220,822.93	68,807.35	5,790.00	6,280.81	301,771.09
1893	235,911.25	70,026.33	7,367.09	7,931.71	321,176.38
1894	245,889.69	86,975.44	4,497.00	1,168.79	338,540.92
1895	251,872.71	72,972.24	4,537.55	2,100.60	331,483.10
1896	255,430.11	27,696.57	4,026.00	1,191.00	288,323.77
1897	253,500.16	53,653.39	5,157.00	1,128.28	313,438.83
1898	a 260,000.00	60,000.00	7,000.00	1,200.00	328,200.00
1899	a 265,000.00	60,000.00	8,000.00	1,200.00	333,200.00

a Estimated.

Balance in water fund June 30, 1897	\$97,153.32
Estimated receipts, 1898	328,200.00
Total	425,353.32
Estimated expenditures, 1898	300,000.00
Estimated balance available June 30, 1898	125,353.32
Estimated receipts, 1898	333,200.00
Estimated total available 1899	458,553.32

The receipts during the year show some recovery from the effects of the decision affecting the validity of outstanding water-main taxes. Legislation looking to the reassessment of much of the invalidated taxes and to the amendment of the assessment laws in so far as relates to unsubdivided county property passed both Houses of Congress at its last session, but reached the President too late to receive his approval. Its reenactment should be requested at the coming session.

During the year the number of water meters in service was increased from 574 to 777, an addition of 203. Compliance with the act of July 14, 1870, requiring all hotels, livery stables, manufacturing establishments, and other places using a large quantity of water to take their supply through meters, was rigidly enforced, and all such premises are now metered. The effect of this metering has been shown previously, and authority for the extension of the meter system is requested.

The number, sizes, and kinds of meters in service on June 30, 1897, are shown in the following table:

Meters.

Size.	Worth-ington.	Thom-son.	Crown.	Nash.	Buffalo.	Union.	Niagara.	Lamb-ert.	Total.
4-inch		3	1	4		1			9
4-inch	5	79	4	88	1	24		2	203
4-inch		2							2
1-inch	15	79	21	119		33	1		268
2-inch	16	48	26	60		4	1	1	156
3-inch	21	19	11	35		7			103
4-inch	12	5	7	7		2			23
4-inch	3	3	1	1					7
6-inch		1	3	2					6
Total	72	239	73	316	1	71	2	3	777

PUBLIC PUMPS AND WELLS.

The appropriation for public pumps and wells was for the previous year increased from \$4,000 to \$8,500, and authority given for the driving of deep wells. Under this appropriation and that for the present

year, the latter becoming available March 3, 1897, 20 deep wells have been driven with fairly good success. These wells are 6 inches in diameter and are cased with heavy wrought-iron drive pipe driven into the solid rock so as to exclude all surface or seepage water, or driven until water is found after passing a thick water-tight stratum of clay. While the quantity of water obtained has varied with the locality, it has, excepting in two instances, been ample for the desired use, and in all but 2 wells the water has been of good quality. As is to be expected from the new wrought-iron casing, thoroughly polished in driving the well, the water contains in many cases a decided evidence of iron, but with the rusting of the casing and the use of the wells this should disappear. The continuance of the appropriation for driving these wells is recommended.

Of the old shallow wells, 133 were in use at the end of the year, and 11 had been closed upon being reported contaminated. As stated in previous reports, these wells, supplied as they are by surface and seepage water, will no doubt all be closed before many years pass, and their replacement by deep wells to furnish a supply of cool water should be continued so long as the deep wells prove successful.

STREET LIGHTING.

At the close of the fiscal year the streets, avenues, alleys, and roads of the District were lighted by 508 1,000-candlepower electric arc lamps, 214 25-candlepower incandescent electric lamps, 6,053 gas lamps, and 1,077 naphtha lamps. As compared with the previous year the increases were 160 arc lamps, 144 incandescent lamps, 178 gas lamps, and 13 naphtha lamps.

The service was much improved by the abandonment of the so-called moonlight schedule of lighting for gas lamps and the adoption of all night and every night lighting. The service has generally been as satisfactory as the appropriations and statutory limitations will permit. The streets of Washington are most difficult to light. The heavy shade from the numerous trees at the curb line makes the use of high candlepower arc lamps spaced at long intervals generally unsuitable. Insufficient appropriations and statutory limitations prevent the erection of such lamps on all business and rapid-transit streets, where the need for them is greatest. The use of the arc lamp on resident streets should be avoided as far as possible. In the summer months they cause great annoyance to the people by reason of their great brilliancy and the insects attracted by them. Under the existing law their use is unavoidable in streets in which the low-power gas lamps fail to furnish sufficient light. Without doubt a lamp can be found that will give the greater illumination that is necessary in many important residential streets at a cost less than that of arc lamps and without the objectionable features of the latter. It is recommended that \$3,000 of the annual appropriation be made available for experimental lighting with improved lamps unrestricted as to cost per lamp and hourly consumption of gas.

A marked increase is requested in the appropriations for street lighting. The existing service is not satisfactory or in keeping with the standards maintained in other branches of the city government. Nearly all the city streets and avenues are but dimly lighted and some streets and populous alleys are not lighted at all. In many of the suburbs improvements are rapidly going forward and appropriations are not sufficient to furnish all the necessary lamps even in

those suburbs that are practically a portion of the city. Many of the important residential streets, particularly the broad and well-shaded avenues, should be more brightly lighted, and all streets occupied by rapid-transit lines should be lighted with arc lamps or other high-power lights.

The need of a clerk in this department is again brought forward. With the additional work delegated to the inspectors on account of the supervision of electric wires and conduits, the services of a clerk are absolutely necessary to avoid inefficiency in the inspection service.

ELECTRIC WIRES AND CONDUITS.

Attention is invited to the full report of Inspector W. C. Allen upon this subject.

The need of a department of electrical control is much felt in the administration of such affairs relating to electric wires as come under municipal control. The creation of such a department has been repeatedly recommended and the recommendation is now renewed. At present such work as must be done by the municipal authorities in the supervision of electrical wires and the enforcement of laws relating thereto is performed by officials of other departments in addition to their regular duties, much of it falling upon the street-lighting department. Notwithstanding this serious handicap, the conditions of this supervision have much improved during the year. Systematic inspection of old and new work has been carried on, and a set of plats showing all existing overhead wires and underground systems for electric lighting and power purposes has been carefully prepared. Mr. Allen's report contains full information of the work done during the year, of all existing wires and conduits as nearly as can now be determined, and a complete compilation of the statutes and decisions upon a subject that has been a fruitful source of contention.

General and systematic legislation upon the subject of the removal of overhead wires and the provision of underground conduits for their reception should be requested of Congress at its next session. The existing conditions are recognized by all interested parties as but temporary. They are restrictive of growth in many directions in which electric light and power facilities should be extended and make no provision at all for the removal of existing unsightly and obstructive masses of overhead wires.

INSPECTOR OF GAS AND METERS.

There are four laboratories for testing the gas supplied by the two gas companies. The gas supplied by the Washington Gaslight Company is tested at 403 Tenth street NW., 1335 Fourteenth street NW., and Fifth and D streets SE. The gas furnished by the Georgetown Gaslight Company is tested at 1338 Thirty-second street NW. The quality of the gas has been examined at these laboratories daily, and has, with few exceptions, exceeded the standards required by law, notwithstanding the recent increase in the legal requirements. Three thousand six hundred and thirty-six gas meters were tested for accuracy during the year.

Authority for the employment of an additional assistant in the office of the Inspector of Gas and Meters is requested. With the large increase in the work of this office, particularly in the testing of meters for the gas companies and for consumers, such additional assistance is at times imperative.

BUILDINGS AND BUILDING INSPECTION.

During the year building and repair permits to the number of 3,852 were issued, the total estimated cost of the improvements being \$4,102,598.75. Three hundred and fifty-five special applications for projections were acted upon, and 354 approved. Four thousand eight hundred and seventy-four inspections and other actions of all kinds with regard to buildings were executed during the year.

The inspection work of this office is of the utmost importance to the general public. With the most exacting and carefully drawn building regulations, it is impossible to obtain good, safe, and substantial construction in all cases without close inspection of all buildings under construction and repair. The force of the office is not sufficient to enable such inspection to be made of all buildings as frequently as is found to be necessary, and an increased number of assistant inspectors is an absolute necessity to secure the people from unsafe and unwise methods of construction, and to render prompt service to the public having business with the office.

Plans were prepared in this office for such municipal buildings as had been authorized and the construction of numerous buildings has been carried forward, in some cases to completion. The preparation of these plans requires much time from the inadequate force of the office, and the consensus of opinion with regard to the designing of public buildings leans strongly toward the employment of outside talent upon such work, by competition or otherwise. The adoption of such a system for the procurement of designs for District buildings is strongly recommended, and legislation toward that end will be requested later. The method heretofore followed of appropriating equal amounts for buildings of the same character and the sites therefor, irrespective of the locality, does not give the best results. In localities where property is the highest and where, if any difference is made, the building should be the more elaborate, the sum available for its construction is the least, and scrimping in one form or another must be resorted to. The amounts appropriated for the construction of a number of buildings of the same class should be furnished in a lump sum to be allotted by the Commissioners under such restrictions as Congress may deem it wise to impose. Appropriations for sites should be made independent of those for buildings and graded according to the value of the ground in the localities selected.

For full details of the work of the Building Inspector's office, reference should be made to his report appended hereto.

OFFICE OF THE SURVEYOR.

Since the end of the fiscal year Mr. William Forsyth, surveyor of the District of Columbia, has severed his connection with this office, after nearly fifty years of faithful and efficient service. The Commissioners accepted his resignation in August with regret, and he retires with the best wishes of all with whom he has come in contact during his long service of the public. Mr. Henry B. Looker, his former assistant, has been promoted to the office vacated by Mr. Forsyth.

Mr. Forsyth's last annual report, appended hereto, contains full details of the transactions of his office and valuable recommendations looking toward the better establishment of property lines in certain sections of the District.

PARKING COMMISSION.

The appropriations made to cover the expenses of the Parking Commission during the past few years have not been sufficient for the proper execution of the duties intrusted to the commission. Of these duties the more important are the planting and care of trees in the public streets and avenues. It will be admitted by all that the street trees in Washington are one of its most distinctive features, and that no one of the many wise and liberal public improvements adds more to the beauty and comfort of the city. The present system of municipal control of streets is an admirable one, and depends for its success almost entirely upon the amount of money set aside annually for its support. Recently the appropriations have not been such as will enable the commission to properly care for existing trees, replant trees where destroyed by storms or decay, and comply with the urgent requests of citizens for tree planting in new sections. As a necessary result, the trees have to too great an extent been neglected, and it has not been possible to properly trim and cultivate them and protect certain varieties from insects. In some localities the trees, instead of adding to the attractiveness of the city, are a detraction therefrom.

Certain varieties of trees that were planted in years past have proved to be of an objectionable character and should be removed as rapidly as they can be replaced by more desirable species. Chief among these are the poplars, which are of rapid growth, but are very destructive to sidewalks and sewers and productive of many complaints. Many of the other rapid-growing trees have about reached the limit of their usefulness and should also be replaced. Funds should be available for destroying insects that infest some of the trees at certain seasons and seriously injure them.

The storms of the past year were unusually severe upon the trees. One thousand one hundred and forty-one trees were blown down by the storm of September 29, 1896. Others were so badly injured as to make the total loss about 1,400. The loss and expense caused by this storm was so great that, even with a deficiency appropriation of \$5,000, it was not possible to bring the work up to date during the year. One thousand four hundred and fifty-five trees were planted, a large portion of them being placed in Columbia Heights, on Connecticut avenue extended, and in Cleveland Park. Current work and the young trees in nursery received the usual attention. A fine stock of trees is now available for planting, and with sufficient funds many vacant tree spaces can be filled and all trees be given the attention necessary to make them of the greatest benefit to the people of the city.

The report of the superintendent of parking is appended hereto.

Very respectfully, your obedient servant,

EDW. BURR,

*Captain, Corps of Engineers,
Assistant to Engineer Commissioner.*

Capt. WM. M. BLACK,

Corps of Engineers, U. S. A.,

Engineer Commissioner District of Columbia.

202 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

Number of assistant engineers, inspectors, foremen, and other employees, regular and temporary, and appropriations from which paid in the first division for the year ending June 30, 1897.

Appropriations from which paid.	Assist- ant en- gineer.	In- spect- ors.	Fore- men.	Other em- ploy- ees.	Total.
Pumping expenses and pipe distribution, 1897		1	4	289	\$46,903.03
Extension of high-service system water distribu- tion, 1897	1	1	3	217	22,588.25
Purchase and repair of pumps, 1897		1	2	14	3,554.38
Purchase and repair of pumps, 1898		1	1	11	440.31
Street lighting, 1897				2	101.31
Electric lighting, 1897		6			2,654.70
Permit work (under direction of the street-lighting division)		5			720.00
Parking commission, 1897			3	94	20,709.72
Surveyor's office, 1897				6	4,829.50
Inspector of buildings, on account of:					
Public schools		6		5	4,551.00
Fire department		2		5	1,406.00
Reformatories and prisons				5	100.00
Total	1	23	13	508	108,578.00

REPORT OF THE SUPERINTENDENT OF THE WATER DEPARTMENT.

SIR: I have the honor to submit the following summary of work done in the distribution branch of the water department of the District of Columbia for the fiscal year ending June 30, 1897.

Mains laid.—Detailed statements of sizes, lengths, locations, and costs of mains laid, of valves placed, hydrants erected, etc., will be found in Tables V, VI, VII, VIII, and IX, herewith, and of mean daily consumption of water in the middle and upper high service in Tables XI and XII. The aggregate length of all sizes, both for main extensions, fire hydrant connections, etc., is 94,015 feet. Of this amount, the 2,180 feet of 20-inch main on Florida avenue NW., from U street east to Fifteenth street, was laid to provide direct connection, independent of the mains on U street, between the mains on the west side of the pumping station and those on the east. Two thousand seven hundred and ninety-two feet of 6-inch mains were lowered an average of about 4 feet, to meet the requirements of the new grade on streets under improvement.

A number of extensions of the upper high service were made into areas formerly supplied by gravity, but which, owing to their elevation, were often left with pressure wholly inadequate. These extensions include the south side of U street from Fourteenth to Fifteenth street NW.; both sides of Fourteenth street from U south to R street; the east side of Nineteenth from Florida avenue to S street NW.; the west side of Nineteenth street for about 200 feet south from R street NW.; both sides of O street between Twenty-ninth and Thirtieth streets, Georgetown, and U street and Florida avenue east from Fourth street W. to Twelfth street NE., along Mount Olivet road to Bladensburg road and south on the latter a distance of 300 feet. This change of service increased the pressure on the mains in question by about 50 pounds per square inch at the lower points. No trouble resulted except the starting of a number of leaks, due to defective joints in the 6-inch main on the east side of Fourteenth street from U to R.

The extension of the middle high service eastward along Florida avenue made possible a much-needed reinforcement at Florida avenue and R street NW. of the 6-inch mains supplying Eckington, Brookland, and vicinity. A still further reinforcement of the supply to this section by means of an extension and completion of the 12-inch main now ending at First and Albany streets NW. is much to be desired. Though the static pressures through this section are ample, the volume of water available for fire purposes is insufficient.

On the upper high service a 6-inch main has been extended from the Brightwood road to and through Takoma Park, giving this place an ample supply, with a static pressure of about 60 pounds per square inch.

The water supply to the various parts of the District is now fairly satisfactory in quantity, with the exception of that to the higher points of the low-service area; the supply here is insufficient, and gives rise to much complaint; the only remedies available are the extension of the middle high service to include these areas (which can not be done without an increase in the pumping capacity of the station).

a decrease in the low-service consumption such as would probably result from a general use of water meters on house services, or an increase in the low-service supply by the completion and use of the Howard University Reservoir, or by other means.

In Table XIV will be found a list of old shallow wells, 133 in number, still in use at the end of the fiscal year, and in Table XV a list of those abandoned and filled during the year; these wells are abandoned only when two independent chemical analyses, made by the chemists of the health and of the engineer departments on samples taken at different times, show the water to be unfit for drinking purposes.

Drilling deep wells.—In July, 1896, a contract was entered into with W. C. Miller to drive "wells in such numbers, to such depths, and at such locations in the District of Columbia as the proper authorities may determine." These wells to be of a diameter of not less than 6 inches and cased where not driven in rock, with best quality, lap-welded, heavy, drive pipe having a normal inside diameter of 6 inches. Where the well enters the rock the casing to be driven into the rock far enough to form a water-tight joint and exclude all seepage water. Under this contract and a subsequent extension of the same wells were driven as indicated in the following table (XVI). Number of wells, 20; total aggregate depth drilled, 3,175 feet; total depth drilled in rock, 621 feet; average cost per well, including furnishing and erection of pump, \$353.78.

The pumps at first used with these wells, built wholly of iron, gave much trouble, owing to frequent breakages, and also to the difficulty of access to the pump chamber. Subsequently a wooden-stock pump was adopted, from the lift pipe of which the rod, plunger and foot valve can be readily withdrawn. While this has been in use but a short time, it is believed that it will prove satisfactory. Should this be the case the iron pumps, as they become disabled in use, will be replaced by the later type.

U street pumping station.—The work at the U street station has consisted chiefly in the completion of the new building; the erection complete of two new Campbell and Zell water-tube boilers, and of a vertical triple-expansion pumping engine of 8,000,000 gallons daily capacity, the furnishing of a small machine shop for the execution of minor repairs to machinery and of miscellaneous work for the Department, the paving of the roadway in the property yard, painting of stable, erection of wagon shed, etc.

The total-normal pumping capacity of the U street pumping station at the present time is 17,900,000 gallons, distributed as follows:

Barr triple expansion vertical	8,000,000
Nordberg triple expansion horizontal	7,000,000
Gaskill compound horizontal	2,500,000
Reno duplex compound	400,000

These amounts can be increased by about 25 per cent by speeding the engines above their normal capacity, with a probable decrease in efficiency.

The capacity of the Nordberg engine as built was 5,000,000 gallons against a pressure of about 150 pounds per square inch, it having been designed for use on the upper high service. As this is at present, and will be for some time to come, used only on the middle high service against a pressure of 65 pounds per square inch, it was decided to add to the capacity by increasing the diameter of the water plungers from 10 to 11½ inches. This has been done and the result found quite satisfactory.

The Barr, Nordberg, and Gaskill engines are at present all connected with the middle high service mains, and only the small compound duplex with those of the upper high service. It is intended, however, to reduce the diameter of the water plungers of the Gaskill compound at an early date, and to place this pumping-engine also on the upper high, or Reno, service, with a capacity reduced to about 1,200,000 gallons per diem.

As the maximum daily consumption on the middle high service is only about 5,000,000 gallons, it would appear from the above figures that either of the larger pumps has an excessive capacity. As direct pumping is used on this system, however, the pump in use is frequently run up to its rated speed during the hours of greatest consumption. Should a reservoir be provided for this service, it is probable that the pumps at present in use would be sufficient for a number of years to come. The use of a reservoir would also insure this service against the occasional slight interruptions incident to the use of direct pumping, besides permitting the engines to be run under more economical conditions. A more detailed description of the new boilers and engine will be found in the duty trial report herewith.

The machine shop above referred to is at present furnished with the following machine tools: Sellers planer, 20 by 20 inches by 5-foot stroke; Hendey-Norton lathe, 14 inches by 6 feet; drill press, 18-inch swing; Gould and Eberhardt shaper, 14-inch stroke; Worcester twist drill grinder and emery grinder, two 14-inch wheels. Power is furnished by a vertical slide-valve engine, cylinder 5 by 7 inches, supplied with steam from the main boilers.

Much annoyance having been caused by the emission of heavy smoke from the pump house stack, an effort was made to abate the nuisance by blowing a jet of combined steam and air over the furnace fire by means of injection pipes penetrating the furnace front just above the fire doors. This device has proved fairly efficient, having reduced the amount of smoke, as nearly as may be estimated, by about 90 per cent.

The Georgetown pumping station, containing a Knowles and a Blake pump having a combined capacity of about 5,000,000 gallons in twenty-four hours, is held in readiness for use should the pumps at the U street station be disabled.

The 4,500,000-gallon reservoir at Reno, supplying the upper high service area, has been in constant use during the year. As indicated by the table, herewith, of mean daily consumption on this service, the reserve is sufficient for at least one month. The level in the reservoir, however, is maintained between 12 and 14 feet gauge, the latter height being that of the overflow.

Very respectfully, your obedient servant,

W. A. MCFARLAND,

Superintendent Water Department.

The ENGINEER COMMISSIONER, DISTRICT OF COLUMBIA.

TABLE I.—*Pressures on the line of the 30-inch main, the water in the reservoir standing at 146 feet above datum on February 27, 1890; at 145 feet above datum on June 27, 1890; at 145.8 feet above datum on August 7, 1896, and at 146 feet above datum on July 28, 1897.*

Location.	Elevation of locality.	February 27, 1890.				June 27, 1890.			
		Pressure.		Elevation of water above datum.		Pressure.		Elevation of water above datum.	
		<i>Feet.</i>	<i>Lbs.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Lbs.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
K and Twenty-fourth streets.....	64.3	20	46.2	110.5	26½	61.2	125.5		
K and Twenty-second streets.....	65.7	19	44	109.7	27	62.3	128		
K and Twenty-first streets <i>a</i>	57.3	25	57.7	115	32	73.9	131.2		
K and Twentieth streets.....	61.7	21	48.5	110.2	30	69.3	131		
K and Eighteenth streets <i>a</i>	67.2	21	48.5	115.7	27	63.5	130.7		
K street and Connecticut avenue <i>a</i>	57.8	25	57.7	115.5	31	71.6	129.4		
K and Seventeenth streets <i>a</i>	55.5	25	57.7	113.1	30	69.3	124.7		
K and Sixteenth streets.....	53.8	22	50.8	104.6	31	71.6	125.4		
K street and Vermont avenue <i>a</i>	63.2	21	48.5	111.9	25½	58.8	122		
K and Fourteenth streets <i>a</i>	63.4	21	48.5	111.8	24½	56.6	120		
K and Thirteenth streets <i>a</i>	77.2	15	34.6	111.8	17½	40.4	117.6		
K and Twelfth streets <i>a</i>	74.1	15	34.6	108.7	18	42.7	116.8		
K and Eleventh streets.....	67.8	13	30	97.8	20	46.2	114		
K and Tenth streets.....	66.2	15	34.6	100.8	22½	51.5	117.7		
K and Eighth streets.....	58.1	17	39.3	97.4	24	55.4	113.5		
Massachusetts avenue and Sixth street.....									
Massachusetts avenue and Fifth street.....					28	64.6	121.3		
Massachusetts avenue and Fourth street.....					28½	65.8	118.2		
Massachusetts avenue and Second street.....					30	69.3	118.5		
					31½	72.8	114.7		

a The water was supplied on February 27, 1890, to the hydrants from the 30-inch main on L street. The observations June 27, 1890, were after the introduction of water into the 48-inch main and after the city had been divided into high and low service areas.

TABLE I.—Pressures on the line of the 30-inch main, etc.—Continued.

Location.	August 7, 1896.			July 28, 1897.		
	Pressure.		Elevation of water above datum.	Pressure.		Elevation of water above datum.
	Lbs.	Feet.		Lbs.	Feet.	
K and Twenty-fourth streets	22½	46.77	111.07	23½	54.62	119
K and Twenty-second streets	22½	51.39	117.09	23½	53.47	117.91
K and Twenty-first streets <i>a</i>	28½	65.83	124.13	29½	67.27	121.52
K and Twentieth streets	26	60.06	121.76	26½	61.52	122.25
K and Eighteenth streets <i>a</i>	22½	51.97	119.17	24	55.20	121.27
K street and Connecticut avenue <i>a</i>	26	60.06	117.86			
K and Seventeenth streets <i>a</i>	30½	70.45	<i>b</i> 125.95	28	64.40	119.19
K and Sixteenth streets	27	62.37	116.17	25	57.50	111.37
K street and Vermont avenue <i>a</i>	21½	50.24	113.44	21	48.30	112.51
K and Fourteenth streets <i>a</i>	22½	51.39	114.79	23	52.90	117.50
K and Thirteenth streets <i>a</i>	14½	33.49	110.69	21	48.30	<i>b</i> 126.87
K and Twelfth streets <i>a</i>	15½	36.38	110.48	21	48.30	<i>b</i> 124.87
K and Eleventh streets	18½	42.15	109.95	19	43.70	110.16
K and Tenth streets	10½	45.62	111.82	21	46	113.10
K and Eighth streets	21½	49.08	107.18	22	50.60	106.22
Massachusetts avenue and Sixth street	25½	59.48	116.18			
Massachusetts avenue and Fifth street	26½	61.79	114.19	27½	62.10	112.95
Massachusetts avenue and Fourth street	26½	61.79	110.99			
Massachusetts avenue and Second street	28½	65.83	107.73	29½	67.85	110.27

a The water was supplied on February 27, 1890, to the hydrants from the 36-inch main on L street. The observations June 27, 1890, were after the introduction of water into the 48-inch main and after the city had been divided into high and low service areas.

b On 48-inch main.

TABLE II.—Pressures on the line of the 36-inch main, the water in the reservoir standing at 14½ feet above datum on February 27, 1890, at 14½ feet above datum on June 27, 1890, at 145.8 feet above datum on August 7, 1896, and 14½ feet above datum on July 28, 1897.

Location.	February 27, 1890.				June 27, 1890.		
	Elevation of locality.	Pressure.		Elevation of water above datum.	Pressure.		Elevation of water above datum.
		Lbs.	Feet.		Lbs.	Feet.	
L and Twenty-fourth streets	65.8	24	55.4	120.2	28	64.6	120.4
L and Nineteenth streets	51.7	26	60	111.7	32½	75	123.7
L and Eighteenth streets	55.4	26	60	112.4	32	73.9	129.3
L and Seventh streets	72.9	17	39.2	112.1	23½	54.2	127.1
L and Fifth streets	62.9	20	46.1	109	31	71.6	134.5
L street and New Jersey avenue	49.8	26	60	109	30½	70.4	120.2

Location.	August 7, 1896.			July 28, 1897.		
	Pressure.		Elevation of water above datum.	Pressure.		Elevation of water above datum.
	Pounds.	Feet.		Pounds.	Feet.	
L and Twenty-fourth streets	30	69.30	135.10	28½	64.40	<i>a</i> 132.34
L and Nineteenth streets	29	66.99	118.69	29½	68.42	121.41
L and Eighteenth streets	26½	61.79	117.19	28	64.40	121.11
L and Seventh streets	19½	44.46	117.36	19½	44.85	118.19
L and Fifth streets	24	55.44	118.34	23½	54.05	118.95
L street and New Jersey avenue	26½	61.79	111.50			

a On 48-inch main.

NOTE.—The pressures of February 27, 1890, were before the introduction of water into the 48-inch main. The pressures of June 27, 1890, were after its introduction and after the division of the city into high and low service areas.

TABLE III.—Pressures on the line of the 48-inch main, the water in the reservoir standing at 145 feet above datum on June 27, 1890; at 145.8 feet above datum on June 27, 1890; at 145.8 feet above datum on August 7, 1896, and at 146 feet above datum on July 28, 1897.

Location.	Elevation of locality.	June 27, 1890.			August 7, 1896.			July 28, 1897.		
		Pressure.		Elevation of water above datum.	Pressure.		Elevation of water above datum.	Pressure.		Elevation of water above datum.
		Lbs.	Feet.	Feet.	Lbs.	Feet.	Feet.	Lbs.	Feet.	Feet.
R and Fourth streets.....	76	27	62.3	138.3	21	49.66	125.66	22	50.60	125.95
R street and New Jersey avenue.....	77	27	62.3	139.3	21	49.08	126.08	22	51.17	128.57
R and Fifth streets.....	75.7	27	63.5	139.2	21	49.66	125.66	22	50.60	125.46
R and Seventh streets.....	79.2	26	61.2	140.4	20	47.93	127.43	20	46.57	126
R and Eighth streets.....	79.3	26	60	139.3	20	47.35	126.65	20	46.57	126
R and Ninth streets.....	79.4	25	58.8	138.2	20	46.20	125.60	19	45.42	125.92
R, Ninth, and Tenth streets	81	25	58.8	139.8	19	44.46	125.46	19	43.70	125.39
R and Tenth streets.....	82.6	25	57.7	140.3	19	43.89	126.49	19	45.42	128.22
R and Eleventh streets.....	86.6	23	54.2	140.8	17	39.84	126.44	17	39.10	126.02
R street and Vermont avenue.....	90.2	22	50.8	141	16	38.11	128.31	17	40.25	130.25
R and Thirteenth streets.....	96.2	18	42.7	138.9	13	30.60	126.80			
R and Fourteenth streets.....	102	16	38.1	140.1	10	24.83	126.83			
R and Fifteenth streets.....	91.7	21	48.5	140.2	15	35.80	127.50	16	36.80	129.05
R and Sixteenth streets.....	88.1	23	53.1	141.2	17	39.27	127.37	19	43.90	132.08
R and Seventeenth streets.....	86.5	25	57.7	144.2	19	45.02	132.12	21	48.30	131.01
New Hampshire avenue and Q street.....	86.4	23	54.2	140.6	18	41.58	127.98	18	41.40	126.90
New Hampshire avenue and Dupont Circle.....	88.4	23	53.1	141.5	17	39.84	128.24	17	40.82	128.82
New Hampshire avenue and N street.....	76.3	28	64.6	140.9	23	54.86	131.16	23	54.05	130.07
New Hampshire avenue and M street.....	60.2	36	83.1	143.3	32	73.92	134.12			
M and Twenty-second streets.....	58.9	35	80.8	139.7	31	72.18	131.08	32	73.60	133.27
M and Twenty-third streets.....	61.4	33	77.3	138.7	30	69.87	131.27	31	71.30	133.31
M and Twenty-fourth streets.....	63.7	33	76.2	139.9	31	72.18	135.88	31	71.30	135.13

TABLE IV.—Pressures on East Capitol street before and after the introduction of water into the 48-inch main.

Location.	Elevation of locality.	Before the introduction of water into the 48-inch main the water in the distributing reservoir standing at 146 feet above datum.			At the end of the fiscal year ending June 30, 1890, the water in the distributing reservoir standing at 145 feet above datum.		
		Pressure.		Elevation of water above datum.	Pressure.		Elevation of water above datum.
		Lbs.	Feet.	Feet.	Lbs.	Feet.	Feet.
East Capitol and Second streets.....	93	4	9.2	162.2	15	24.6	127.6
East Capitol and Third streets.....	94	3	8.1	162.1	15	25.8	129.8
East Capitol and Fifth streets.....	88.5	6	13.9	162.4	16	38.1	126.6
East Capitol and Sixth streets.....	86.2	6	15	161.2	17	40.4	126.6
East Capitol and Seventh streets.....	81.4	8	18.5	99.9	20	46.2	127.6
East Capitol and Ninth streets.....	83.8	8	19.7	163.5	20	46.2	130
East Capitol and Eleventh streets.....	86	6	15	161	18	42.7	128.7

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TABLE IV.—*Pressures on East Capitol street, etc.—Continued.*

Location.	August 7, 1896, the water in the distributing reservoir standing at 145.8 feet above datum.			July 28, 1897, the water in the distributing reservoir standing at 146 feet above datum.		
	Pressure.		Elevation of water above datum.	Pressure.		Elevation of water above datum.
	Lbs.	Feet.	Feet.	Lbs.	Feet.	Feet.
East Capitol and Second streets	12½	39.45	122.45	13	29.90	123.74
East Capitol and Third streets	12½	28.29	122.29	13	29.90	121.87
East Capitol and Fifth streets	14	32.34	120.84	13	31.05	120.37
East Capitol and Sixth streets	14½	34.67	120.54	14	32.20	118.47
East Capitol and Seventh streets	16½	38.69	120.69	17	39.10	121.61
East Capitol and Ninth streets	16½	37.53	121.33	15½	35.65	119.37
East Capitol and Eleventh streets	15½	35.22	121.22	14½	34.35	119.79

TABLE V.—*Mains laid during the year, and miscellaneous work.*

New mains laid.	Linear feet.	New mains laid.	Linear feet.
20 inches diameter	2,180.50	1½ inches diameter	2,101.80
12 inches diameter	6,877.27	Connections to fire hydrants	685.60
6 inches diameter	70,063.19	Intersections and connections	722
4 inches diameter	10,380.65	Mains lowered	2,792
3 inches diameter	992.40		
New stop valves	270	Public hydrants repaired	827
Stop valves repaired	78	Fountains erected	3
Valve casings adjusted to grade	26	Fountains abandoned	1
Fire hydrants erected	59	Fountains to replace old ones	2
Fire hydrants moved	14	Fountains adjusted to grade	1
Fire hydrants adjusted to grade	1	Fountains repaired	132
Fire hydrants repaired	971	Wells filled	11
Public hydrants erected	8	Wells cleaned	5
Public hydrants abandoned	7	Pumps repaired	651
Public hydrants adjusted to grade	7	Taps made	1,646
Public hydrants to replace old ones	5		

TABLE VI.—*Summary statement of the distribution system.*

	In service prior to June 30, 1896.	Added during the fiscal year.	Total June 30, 1897.
	Linear feet.	Linear feet.	Linear feet.
55 inches diameter	662		662
48 inches diameter	29,796		29,796
36 inches diameter	23,245		23,245
30 inches diameter	36,719		36,719
24 inches diameter	21,569.75		21,569.75
20 inches diameter	32,406.50	2,180.50	34,587
16 inches diameter	2,500		2,500
12 inches diameter	172,679	6,877.27	179,556.27
10 inches diameter	12,141		12,141
8 inches diameter	5,925		5,925
6 inches diameter	1,170,088.76	670,570.80	1,840,659.56
4 inches diameter	50,174.75	670,504.35	60,769.10
3 inches diameter	53,963.70	982.40	54,946.10
1½ inches diameter		2,101.80	2,101.80
6 inch connections to fire hydrants	32,627.95	685.60	33,313.55
4 inches diameter and smaller	108,630		108,630
	1,752,478.41	91,014.81	1,843,493.22
	Number.	Number.	Number.
Stop valves	2,997	270	3,267
Fire hydrants	1,757	50	1,807
Public hydrants	328	8	336
Service connections	44,818	118	44,936
Taps	57,586	1,646	59,232
Public wells, deep driven		21	21
Public wells, shallow	145		145
Horse fountains	71	3	74

a Including 1,836.55 feet of 6-inch and 3,656 feet of 4-inch laid under the permit system.

b 1,440 feet abandoned on Columbia road on account of laying new main for the Metropolitan Railroad Company.

c 1 public hydrants abandoned.

d 11 wells filled.

e 1 horse fountain abandoned.

TABLE VII.—Statement showing cost of water mains laid during the fiscal year 1896-97.

Street.	Streets between—	Size.	Length.	Cost of material.	Cost of labor.	Total cost.
		<i>Inches</i>	<i>Lin. feet.</i>			
North side Providence, Brookland.	Thirteenth and Fifteenth.	14	1,065.1	\$90.45	\$110.06	\$200.51
Center Lansing, Brookland.	Fourteenth and Sixteenth	14	806.7	50.10	70.19	120.29
North side Providence, Brookland.	East of Fifteenth and west of Fifteenth.	14	202	11.74	26.00	37.74
Alley, square 581		3	326.9	98.57	138.75	237.32
Alley, square 544		3	329	84.43	124.90	209.42
Alley, square 358		3	208.5	118.58	150.61	269.19
Alley, square 449		4	810.4	190.61	375.46	566.07
Alley, square 367		4	112	64.45	43.00	107.45
Alley, square 500		4	215	123.77	171.17	294.94
Alley, square 68		4	283.4	102.68	114.06	216.74
Alley, square 586		4	174	88.02	120.91	208.93
Alley, square 531		4	186	42.35	68.88	111.23
Alley, square 1012		4	275.4	93.85	121.94	215.79
Alley, square 457		4	430.69	143.44	221.92	365.36
Alley, square 1041		4	617.35	169.12	156.25	325.37
Alley, square 192		4	199.7	87.71	66.32	154.03
Alley, square 776		4	236	64.93	90.91	155.84
Alley, square 1239		4	363.35	114.81	120.79	235.60
Alley, square S. 915		4	157.3	61.05	48.69	109.74
Alley, square 1029		4	35	11.74	19.12	30.86
Alley, square 534		4	208.4	60.32	85.12	145.44
Alley, square 590		4	300	70.61	68.51	139.12
Alley, square 577		4	174.3	51.07	44.31	95.38
Alley, square 276		4	488.86	190.52	150.01	340.53
Alley, square 577		4	220.3	51.14	88.67	139.81
Alley, square 1208		4	253.3	68.94	72.87	141.81
Alley, square 296		4	67	25.68	20.25	45.93
Alley, reservation 11		4	190.6	56.27	48.94	105.21
Center Van SE	New Jersey avenue and First.	4	524.5	127.91	160.43	288.34
East side Potomac	North from N	4	45	21.19	32.00	53.19
East side North Capitol.	E and Massachusetts avenue.	6	399	158.12	112.62	280.74
Center M NE	Second and Third	6	649.3	374.05	115.62	489.67
Center and north side I SE.	Twelfth and Thirteenth	6	586.9	271.41	216.50	487.91
Center Twelfth	Hartford and Galveston	6	1,020	459.41	277.06	736.47
Center Galveston, Brookland.	Twelfth and Thirteenth.					
Center Erie NW	West from Sixteenth	6	184.30	64.00	65.00	129.00
Center Clifton NW	East from Thirteenth	6	269.30	106.19	104.49	210.68
North side and center M SE.	Fifth and Sixth	6	417.90	191.36	198.60	389.96
North side Rhode Island avenue NW.	Eleventh and Twelfth	6	329.70	154.49	176.09	330.58
Center Twenty-second NW.	C and Water	6	323.00	112.08	101.18	213.26
Center Center NW	Meridian and Oak	6	179.30	61.39	54.93	119.32
West side Eighteenth NW.	R and S	6	402.80	139.19	164.17	303.36
South side Spring road.	Thirteenth and Hohmead avenue.	6	329.20	169.96	68.37	238.03
South side C SE	South Capitol and New Jersey avenue.	6	345	140.31	114.56	254.87
West side Thirty-fifth	Prospect and O	6	3,165.90	1,473.25	1,282.20	2,845.45
South side O	Thirty-fifth and Thirty-second.					
South side Dumbarton.	Thirtieth and Twenty-ninth.	6	3,165.90	1,473.25	1,282.20	2,845.45
West side Twenty-eighth NW.	Dumbarton and P	6	3,165.90	1,473.25	1,282.20	2,845.45
Center Thirteenth	Galveston and Emporia	6	1,712	730.11	495.00	1,225.11
Center Frankfort	West from Thirteenth					
Center Emporia, Brookland.	West from Thirteenth	6	1,712	730.11	495.00	1,225.11
Center Thirteenth SE	Eand Pennsylvania avenue	6	391.50	136.10	137.07	273.17
North side South Carolina avenue SE.	Ninth and Tenth	6	340.40	159.10	173.00	332.10
Center Thirteenth	Emporia and Detroit	6	1,262.20	533.27	257.19	810.45
Center Detroit, Brookland.	Thirteenth and a point west of Twelfth.					
Center Fifth SE	L and M	6	384	125.91	86.75	212.66
Center Fourth SE	M and N	6	672	245.64	271.81	517.45
East side First SE	L and K	6	316.50	111.74	112.44	254.18
Center D SE	Fifteenth and Sixteenth	6	410	263.46	182.18	385.64
Center Sixteenth NE.	South from Rosedale	6	169.70	109.76	85.50	195.26

TABLE VII.—Statement showing cost of water mains laid during the fiscal year 1896-97—Continued.

Street.	Streets between—	Size.	Length.	Cost of material.	Cost of labor.	Total cost.
		Inches	Lin. feet.			
Center Fifteenth NW	Columbia road and Kene-saw.	6	533.10	\$198.90	\$178.12	\$377.11
North side "Little" B NW.	Eleventh and Twelfth	6	294.60	190.50	128.56	319.06
Northside Morris NE	Sixth and Seventh	6	617.80	230.86	129.00	359.86
East side Eighth NE	F and G	6	556.90	215.13	175.93	391.05
Center I NE	Ninth and Eleventh	6	630.50	209.88	215.30	515.18
North side G SE	Seventh and Eighth	6	317	131.51	144.26	277.77
Center Harvard NW	Thirteenth and Fourteenth.	6	97	32.16	33.63	65.79
North side North Carolina avenue NE.	Thirteenth and Fourteenth.	6	727.10	317.90	243.13	561.03
East and west sides Thirty-fifth NW.	U and Madison	6	2,202.60	1,012.85	644.24	1,657.09
West side Delaware avenue SW.	H and I	6	310.50	122.55	122.43	244.98
South side Virginia avenue NW.	Twenty-second and Twenty-third.	6	451.30	193.28	188.13	381.41
West side Canal SW.	First and C	6	218.40	90.08	107.98	207.06
East side South Capitol.	D and Ivy	6	757	282.13	261.31	523.44
West side South Capitol.	D and Carroll	6	757	282.13	261.31	523.44
West side Second SE	Heckman and G	6	192	68.79	90.37	159.16
North and south sides E SE.	Third and Fourth	6	816.50	312.76	309.40	622.16
Center Jackson, Un-iontown.	Taylor and Fendall	6	452	158.56	78.19	236.75
West side Columbia	Nineteenth and Wyoming	6	1,145.10	605.40	435.86	1,041.26
South side Wyoming	Columbia and Connecticut avenue extended.	6	1,145.10	605.40	435.86	1,041.26
East side Connecticut avenue extended NW.	South from Wyoming	6	1,145.10	605.40	435.86	1,041.26
Center Lamar	Thirteenth and Morgan	6	989.60	450.60	211.26	670.86
Center Morgan NW	South from Lamar	6	989.60	450.60	211.26	670.86
South side Florida NW.	First and Q	6	596.75	286.50	149.00	435.50
East side New Hampshire avenue.	Rock Creek Church road and Omaha.	6	2,376.10	979.44	608.50	1,587.94
South side Omaha	New Hampshire avenue and Fifth.	6	2,376.10	979.44	608.50	1,587.94
Center Fifth, Pet-worth.	Omaha and Philadelphia	6	2,376.10	979.44	608.50	1,587.94
South side Rhode Is-land avenue NW.	Fifth and New Jersey av-enue.	6	317.60	197.15	134.37	331.52
West side Florida av-enue NW.	South from Q	6	247.20	160.83	130.50	291.33
Center Phelps NW	Le Roy and California	6	342.40	121.33	98.81	220.14
Center Twenty-sev-enth NW.	M and O	6	1,220.60	638.10	273.30	911.40
North side B SE	Elighth and Ninth	6	349.50	154.48	121.10	275.58
Center Chestnut	Magnolia and Blair	6	349.50	154.48	121.10	275.58
Center Blair	Chestnut and Wabash	6	349.50	154.48	121.10	275.58
Center Wabash, Tu-koma.	Blair and Piney Branch road.	6	349.50	154.48	121.10	275.58
Center Piney Branch road.	Wabash and Umatilla	6	4,015.15	1,703.72	929.89	2,633.61
Center Vermillion	Piney Branch and Sixth.	6	4,015.15	1,703.72	929.89	2,633.61
Center Umatilla	Piney Branch road and Brightwood avenue.	6	4,015.15	1,703.72	929.89	2,633.61
North side D SW	West from Four-and-a-half	6	231.60	98.44	82.64	181.08
South side Florida avenue NW.	First and R	6	435.30	150.62	130.76	280.38
Center Princeton NW.	East from Thirteenth	6	161.20	65.87	66.00	131.87
Center Harvard NW.	Thirteenth and Fourteenth.	6	300.50	136.85	150.50	242.35
North side B	Tenth and Twelfth	6	1,450.85	758.77	864.23	1,623.00
Northside "Little B"	Tenth and Eleventh	6	1,450.85	758.77	864.23	1,623.00
West side Ninth	B and Louisiana avenue	6	1,450.85	758.77	864.23	1,623.00
East side Tenth	do	6	1,450.85	758.77	864.23	1,623.00
Center Thirteenth SE.	D and E	6	424.40	134.21	119.32	253.53
Center Q NW	East from Twenty-sixth	6	188.80	129.63	59.18	188.81
East side Second SE.	M and N	6	624	243.20	239.63	482.82
East side Twelfth NE.	I and K	6	449.50	175.27	141.75	317.02

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TABLE VII.—Statement showing cost of water mains laid during the fiscal year 1896-97—Continued.

Street.	Streets between—	Size.	Length.	Cost of material.	Cost of labor.	Total cost.
		<i>Inches</i>	<i>Lin. feet.</i>			
West side Fifth.....	K and L.....	6	569.30	\$257.99	\$172.14	\$430.13
East side Fifth NE.....	North from K.....	6	461.35	224.87	188.92	413.79
North sides E and Virginia avenue SW.....	First and Second.....	6				
South side Georgia avenue SE.....	K and Fourteenth.....	6	1,672.59	636.43	447.50	1,083.93
Center K.....	Georgia avenue and Thirtieth.....	6				
East side First SE.....	L and M.....	6	384.60	149.00	110.88	\$259.88
West side North Capitol.....	North from D.....	6	222.35	94.31	102.61	196.92
Center Seventh NE.....	I and K.....	6	258.70	103.60	84.39	187.99
Center Nichols, Uniontown.....	Southerly from Morris road.....	6	1,370	611.92	682.67	1,294.59
North side Maryland avenue NE.....	Third and Fourth.....	6	437.85	200.21	172.77	372.98
Center Tenth SE.....	I and K.....	6	306.10	115.22	113.50	228.72
Center Warren NE.....	B and C.....	6	573.10	246.50	179.62	426.12
South Side G SW.....	East from Half.....	6	182.80	114.15	72.87	187.02
North Side Georgia avenue SE.....	Eighth and Ninth.....	6	495.10	207.15	148.55	355.70
West side Ninth.....	Georgia avenue and L.....	6				
North side Virginia avenue NW.....	I and Twenty-eighth.....	6	99.25	71.68	47.06	118.74
North and south sides O NW.....	Twenty-ninth and Thirtieth.....	6	624.80	318.54	316.71	635.25
South side T NW.....	Sixteenth and New Hampshire avenue.....	6	323.19	131.76	116.79	248.55
East side Sixth SE.....	G and I.....	6	655.70	255.57	204.17	519.74
Center Irving and Roanoke NW.....	Brightwood avenue and Thirtieth.....	6	2,017	724.08	571.82	1,295.90
Center Sixth NE.....	M and Florida avenue.....	6	159.90	115.88	58.00	173.88
North side M NW.....	Eighteenth and Nineteenth.....	6	497.05	252.54	261.73	514.27
East side First NW.....	Pierce and M.....	6	318.60	101.06	85.37	186.43
Center Lansing, Brookland.....	Thirteenth and Fourteenth.....	6	676	286.38	202.87	489.25
North side M NE.....	Fifth and Sixth.....	6	394.55	162.53	97.25	259.78
District side Magnolia avenue, Takoma.....	Chestnut and Oak.....	6	1,079	363.44	210.92	604.37
Center Olive NW.....	Twenty-seventh and Thirtieth.....	6	961.55	524.48	408.82	933.30
Center Eslin NW.....	Lamar and Lydecker.....	6	637	226.06	122.55	348.61
North side M NW.....	Nineteenth and Twentieth.....	6	347.60	182.89	137.11	320
East side Fifth SE.....	G and Virginia avenue.....	6	592.95	225.72	150.01	375.73
West side Kentucky and Fifteenth SE.....	E and G.....	6	764	341.39	207.50	548.89
Center Harvard NW.....	East from Thirtieth.....	6	713.95	240.27	161.88	402.15
Center L SE.....	Fifth and Seventh.....	6	897.20	308.88	308.00	616.88
West side Thirteenth NW.....	Princeton and Harvard.....	6	365.40	130.76	91.50	222.26
Do.....	Harvard and Columbia.....	6	319	110.87	97.50	208.37
Lydecker NW.....	East from Eslin.....	6	143.70	113.89	49.75	163.64
West side Fifth SE.....	Georgia and Virginia.....	6	582.40	219.99	157.77	377.76
East side Fourteenth SE.....	E and G.....	6	569.25	212.30	158.00	370.30
Center Erie NW.....	Sixteenth and Central.....	6	740	321.78	186.43	508.21
East side Central NW.....	South from Erie.....	6				
East side Sixth SW.....	K and L.....	6	304.90	105.51	105.44	210.95
North side P NW.....	Seventeenth and Eighteenth.....	6	840	553.44	389.75	943.19
North side F NE.....	Eleventh and Twelfth.....	6	316.30	141.90	106.13	248.03
East side Monroe, Uniontown.....	Harrison avenue and railroad tracks.....	6	210.40	87.06	73.80	160.86
Center Fillmore, Uniontown.....	Jefferson and Grant.....	6	290.20	97.34	77.63	174.97
Center Polk, Uniontown.....	Jefferson and Arthur.....	6	455.90	168.90	97.93	266.83
Center Meridian NW.....	East of Center.....	6	77.80	42.75	30.63	73.38
Center Chicago NE.....	First and Second.....	6	634.70	251.91	146.18	398.09
Center Seaton NE.....	Second and Third.....	6	344	182.33	105.51	287.84
Center First SE.....	North from O.....	6	445.80	149.01	76.75	225.76
Center Fourth SE.....	N and Georgia.....	6	87.80	33.67	17.44	51.11
North side Rock Creek Church road.....	New Hampshire avenue and Seventh.....	6	774.70	344.85	149.68	494.53
West side Third SW.....	K and L.....	6	322.40	191.58	102.70	294.28

TABLE VII.—Statement showing cost of water mains laid during the fiscal year 1896-97—Continued.

Street.	Streets between—	Size.	Length.	Cost of material.	Cost of labor.	Total cost.
		Inches.	Lin. feet.			
West side Fourteenth SE.	E and G	6	566.4	\$318.55	\$134.12	\$452.67
North side Florida NW.	Quincy and North Capitol	12	812	735.99	289.24	1,025.23
North side Florida NE.	M and Ninth	12	1,146.50	960.79	407.86	1,374.65
South side East Capitol.	Thirteenth and Fourteenth.	12	1,095	1,075.42	401.81	1,477.23
East side Thirteenth SE.	East Capitol and Massachusetts avenue.	12	1,008.22	919.62	261.69	1,181.31
North side Florida NE.	Porter and New York avenue.	12	262.6	208.43	101.32	309.75
North side Florida avenue NE.	Delaware avenue and Third.	12	2,269.6	2,043.82	861.33	2,905.15
North side Florida avenue NE.	Third and Eleventh.	12	313.35	305.57	134.41	439.98
Center R NW	Florida avenue and Twenty-second.	12	2,180.5	5,043.80	1,627.37	6,671.17
Center W NW	New Hampshire avenue and Sixteenth.	20				
Center Florida avenue.	Sixteenth and U	20				
<i>Intersections and connections.</i>						
East Capitol and First East Capitol and Fourth.		4	46	132.77	84.50	217.27
Crossing I NW	Marion and Sixth	4	60.8	66.67	39.49	106.16
Eight and F NE		6	40	14.18	16.94	31.12
Nineteenth and S NW		6	80	146.85	119.00	265.85
Nineteenth and T NW		6				
Nineteenth and Florida avenue.	Seventeenth and Eighteenth.	6				
T NW		6				
Florida avenue and R NW.		6		57.04	34.48	91.52
Florida avenue and Hillyer.		6	188.5	463.79	360.04	823.83
By passes along Florida avenue NW and NE.		6				
Tenth and I SE		6	20	8.12	8.00	16.12
M at Fourth, Fifth, and Sixth NE.		6	124.4	41.76	96.12	137.88
Unfinished mains.					58.80	58.80
Total				43,820.52	629,744.29	73,564.81
Cost of laying mains, intersections, and connections, including repairs to improved pavements				43,820.52	629,744.29	73,564.81
Cost of erecting fire hydrants, including repairs to improved pavements				2,289.74	6636.18	2,905.92
Cost of superintendence and engineering				46,000.26	30,389.47	76,470.73
Grand total				46,000.26	34,863.68	80,953.94

a 14.76 per cent should be added to the cost of labor to attain the actual amount expended for labor, superintendence, and engineering.

TABLE VIII.—Statement of the lengths and costs of water mains laid from July 1, 1878, to June 30, 1897.

Fiscal year.	36-inch.	24-inch.	20-inch.	16-inch.	12-inch.	10 inch.	8-inch.
	<i>Lin. feet.</i>	<i>Lin. feet.</i>	<i>Lin. feet.</i>	<i>Lin. feet.</i>	<i>Lin. feet.</i>	<i>Lin. feet.</i>	<i>Lin. feet.</i>
1878.....	39.5				3,719		
1879.....					7,469		
1880.....							
1881.....							
1882.....							
1883.....					1,625		26
1884.....					1,038		
1885.....					967		
1886.....					1,938	791	
1887.....			a 4,835		b 1,124	a 2,908	
1888.....					731		
1889.....		2,312	5,140		5,626	2,784	
1890.....							
1891.....					c 5,291		
1892.....				2,926	2,500	c 10,163	
1893.....					6,473		
1894.....			278		39,386		
1895.....	6,617				27,731		
1896.....	204		8,874		11,873		
1897.....			2,180		6,877		
Total.....	39.5	9,223	24,233	2,500	131,877	6,573	26

Fiscal year.	6-inch.	4-inch.	3-inch.	14-inch.	Total.	Cost.
	<i>Lin. feet.</i>	<i>Lin. feet.</i>	<i>Lin. feet.</i>	<i>Lin. feet.</i>		
1878.....	12,781	30			16,569.5	\$14,846.29
1879.....	8,516	1,367			17,352	19,436.63
1880.....	d 3,024				3,024	
1881.....	3,709				3,709	3,110.70
1882.....	1,920				1,920	1,626.43
1883.....	4,084				5,735	8,073.70
1884.....	8,972				10,010	10,492.51
1885.....	27,766	358	485		29,572	25,865.35
1886.....	35,192		6,623		41,544	40,025.10
1887.....	30,041	a 262	7,124		46,414	56,951.00
1888.....	9,123	9,118	3,937		22,939	17,626.63
1889.....	36,742	6,571	8,753		67,928	79,342.46
1890.....	c 54,737	e 2,856	2,855		40,448	19,113.54
1891.....	c 56,893	c 3,142	c 11,013		76,249	49,702.65
1892.....	e 88,709.5	c 3,342	1,296		108,926.5	74,733.04
1893.....	e 54,173.5	e 8,336.5	e 3,458.5		72,911.5	56,339.39
1894.....	86,632.5	12,832	2,918.5		142,047	126,566.55
1895.....	f 103,785.5	5,442	f 2,735		146,368.5	134,562.31
1896.....	g 61,464.5	g 1,738	g 3,262.5		87,506	89,365.12
1897.....	h 71,266.5	h 10,595	982.5	2,104	94,015	77,954.81
Total.....	739,562	66,579.5	55,441	2,104	1,038,158	900,864.29

a Cost of laying intersections not included herein.

b 1,074 feet laid to Congressional Library, cost not included herein.

c 45,246 feet laid under permit system, cost not included herein.

d Laid on Road street, Georgetown, to replace old cement pipe.

e 434 feet laid under permit system and 1,939 feet used for connections to fire hydrants, cost

not included herein.

f 14,790 feet laid under permit system and 3,406 feet used for connections to fire hydrants, cost

not included herein.

g 18,199.55 feet laid under permit system and 1,004 feet used for connections to fire hydrants,

cost not included herein.

h 1,837 feet of 6-inch and 3,656 feet of 4-inch laid under permit system and 696 feet used for

connections to fire hydrants, cost not included herein.

TABLE IX.—Average cost per foot for laying mains of various sizes.

Size.	Linear feet.	Cost of material.	Cost of labor.	Cost of superintendence and engineering.	Total cost.
11 inches diameter	2,163.80	\$0.0724	\$0.0080	\$0.0163	\$0.1867
8 inches diameter	980.40	.2588	.2700	.0400	.5688
4 inches diameter	6,567.85	.3000	.2876	.0424	.6300
6 inches diameter	66,678.24	.4224	.2639	.0134	.7597
12 inches diameter	6,877.27	.0089	.3483	.0514	1.3086
20 inches diameter	2,180.50	2.3140	.7438	.1068	3.1676

The above table does not include the cost of relaying pavements. Brick pavements have been laid by the water department, and other kinds by the surface department.

TABLE X.—Average cost per foot for relaying pavements.

Size.	Cobble.		Brick.		Belgian.		Asphalt blocks.		Sheet asphalt.	
	Linear feet.	Cost.	Linear feet.	Cost.	Linear feet.	Cost.	Linear feet.	Cost.	Linear feet.	Cost.
3 inch	306	\$0.12								
4 inch	1,852	.13			116	\$0.42	347	\$0.31	60	\$0.46
6 inch	1,128	.15	6,673	\$0.07	1,451	.54	602	.63	183	.57
12 inch									12	.85

TABLE XI.—Average daily consumption, middle high service.

Month.	Gallons.	Month.	Gallons.
July, 1896	4,178,000	January, 1897	4,000,000
August, 1896	4,010,000	February, 1897	4,000,000
September, 1896	4,012,000	March, 1897	4,056,300
October, 1896	3,894,000	April, 1897	3,953,600
November, 1896	3,758,000	May, 1897	4,208,500
December, 1896	4,000,000	June, 1897	4,536,800

TABLE XII.—Average daily consumption, upper high service.

Month.	Gallons.	Month.	Gallons.
July, 1896	121,560	January, 1897	109,570
August, 1896	148,000	February, 1897	122,300
September, 1896	136,600	March, 1897	108,100
October, 1896	91,700	April, 1897	109,700
November, 1896	75,920	May, 1897	106,500
December, 1896	93,120	June, 1897	104,200

TABLE XIII.—Statement of the lengths and costs of water mains laid under the appropriation for the extension of the high-service system of water distribution from July 1, 1893.

Fiscal year.	24-inch.	20-inch.	12-inch.	6-inch.	4-inch.	14-inch.	Total.	Cost.
	<i>Lin. feet.</i>	<i>Lin. feet.</i>	<i>Lin. feet.</i>	<i>Lin. feet.</i>	<i>Lin. feet.</i>	<i>Lin. feet.</i>	<i>Lin. feet.</i>	
1893			2,682	2,822.50			5,504.50	\$6,760.16
1894		278	52,789.75	14,269.50			67,337.25	69,247.27
1895	6,616.75		9,625	28,386.25	954		45,592	77,716.66
1896	204	8,873.50	3,788.35	12,800.55	307.50		26,153.90	46,241.65
1897		2,180.50	3,510.42	28,064.85	348.35	2,103.80	36,197.92	31,497.54

TABLE XIV.—Locations of shallow wells.

NORTHWEST.

Location.	Street or avenue.	Location.	Street or avenue.
West side	Thirty-fifth, near T.	Southeast corner.	Ninth and H.
Southwest corner	Thirty-fourth, near U.	North side	Louisiana avenue, between Ninth and Tenth.
Northwest corner	Thirty-fourth and S.	Southwest corner	Eighth and F.
East side	Thirty-second, near T.	Northwest corner	Sixth and K.
Southwest corner	Thirty-second and R.	Northeast corner	Sixth and H.
West side	Thirty-second, between P and Q.	East side	Sixth, between F and G.
Southeast corner	Thirty-second and Dumbarton.	Southeast corner	Fifth and Ridge.
Northwest corner	Thirty-third and N.	East side	Fifth, between I and K.
West side	Valley, near Q.	Northeast corner	Vernmont avenue and L.
South side	O, between Thirty-first and Thirty-second.	Northwest corner	Thirtieth and M.
Northwest corner	Twenty-eighth and O.	West side	New Jersey avenue, between M and N.
Southeast corner.	Twenty-seventh and K.	Southeast corner.	New Jersey avenue and Pierce.
North side	D, between Twenty-second and Twenty-third.	Northwest corner	Third and L.
South side	Virginia avenue, between Twenty-first and Twenty-second.	South side	New York avenue, between Fourth and Fifth.
North side	T, between Seventeenth and Eighteenth.	North side	New York avenue, between Sixth and Seventh.
	New York avenue, between Seventeenth and Eighteenth.	Northeast corner.	G, between First and North Capitol.
	Caroline, between Fifteenth and Sixteenth.	West side	Third and Indiana avenue.
Northwest corner	Sixteenth and Corcoran.	South side	Four and a-half, between C and D.
Northeast corner.	Seventeenth and K.	South side	E, between Seventeenth and Eighteenth.
West side	Twelfth, between G and H.	North side	Massachusetts avenue, between Sixth and Seventh.
Northwest corner	Twelfth and New York avenue.	South side	Wilson, between Third and Fourth.
	Twelfth and Massachusetts avenue.	East side	Sixth (extended), near Lincoln.
Southwest corner	Twelfth and N.	Southeast corner	Brightwood avenue and Irving.
Southeast corner.	Twelfth and Florida avenue.	West side	Brightwood avenue, south of Whitney.
East side	Twelfth and Q.	East side	Brightwood avenue, of Brightwood, D. C.
Southeast corner.	Eleventh, near G.	Northeast corner	Sherman and Sheridan avenues.
Northwest corner	Eleventh and M.	Southwest corner	Eighth (extended) and Grant avenue.
Northeast corner.	Tenth and N.		

NORTHEAST.

East side	North Capitol, between B and C.	Northwest corner	Eighth and A.
Engine Co. No. 3.	Delaware avenue and C.	North side	E, between Eighth and Ninth.
Southeast corner	First and K.	Northwest corner	Eleventh and F.
Northwest corner	Third and C.	North side	B, between Thirteenth and Fourteenth.
Northeast corner.	Third and Massachusetts avenue.	East side	Lincoln avenue, between S and T.
Northwest corner	Second and G.	Southwest corner	North Capitol and Randolph.
Northeast corner	Fourth and E.	North side	Keating avenue, near Lincoln avenue.
Southwest corner	Fourth and East Capitol.		Sutton, between Twentieth and Twenty-first.
Southeast corner.	Fifth and A.		
Northwest corner	Fifth and D.		
East side	Second and E.		
	Sixth and C.		
	Sixth, between A and B.		

SOUTHWEST.

North side	Virginia avenue, between Tenth and Eleventh.	Southeast corner	Four-and-a-half and Maryland avenue.
Northeast corner	Eleventh and F.	North side	I, between Four-and-a-half and Sixth.
South side	D, between Ninth and Tenth.		B, between First and Second.
Southeast corner.	Seventh and I.	Southwest corner	South Capitol and N.
Northeast corner.	Seventh and M.	East side	Half and P.
North side	K, between Sixth and Seventh.		M, between Four-and-a-half and Sixth.
Northeast corner.	Sixth and Maryland avenue.		

TABLE XIV.—Locations of shallow wells—Continued.

SOUTHEAST.

Location.	Street or avenue.	Location.	Street or avenue.
Northeast corner	First and K.	East side.....	Eleventh, between Band C.
Southeast corner	First and M.	South side.....	Eleventh, between G and I.
North side.....	O, between Half and First.	East side.....	I, between Eleventh and
Northeast corner	Second and I.	Southeast corner	Twelfth.
Southeast corner	Third and Pennsylvania	East side.....	Eleventh, between N and O.
	avenue.	East side.....	Twelfth and G.
Southwest corner	Third and C.	South side.....	Twelfth, between D and E.
West side.....	Fourth, near South Caro-	West side.....	E, between Twelfth and
	lina avenue.	South side.....	Thirteenth.
Southeast corner	Fourth and C.	South side.....	Thirteenth, between D and
Northeast corner	Fifth and G.	West side.....	E.
West side.....	Sixth, between C and	South side.....	I, between Thirteenth and
	Pennsylvania avenue.	South side.....	Fourteenth.
Southwest corner	Sixth and B.	Southeast corner.	T. Hillsdale.
Southeast corner	Sixth and A.	West side.....	Stanton avenue and Elvin,
Northwest corner	Seventh and B.	West side.....	Hillsdale.
East side.....	Seventh, between B and C.	Northeast corner	Nichols avenue, opposite
Northeast corner	Seventh and Virginia ave-	Northwest corner	Birney School.
	nu.	North side.....	Washington and Pierce,
Northwest corner	Eighth and I.	Southwest corner	Uniontown.
Northeast corner	Eighth and B.	South side.....	Harrison and Pierce,
Southeast corner	Eighth and A.	South side.....	Uniontown.
Northwest corner	Ninth and South Carolina	South side.....	Fillmore and Jackson,
	avenue.		Uniontown.
Southeast corner	Ninth and C.		Harrison and Minnesota
Northwest corner	Ninth and E.		avenue, Uniontown.
South side.....	Tenth and South Carolina		K, between Thirteenth and
	avenue.		Fourteenth.
	South Carolina avenue,		
	between Tenth and		
	Eleventh.		

TABLE XV.—Location of shallow wells filled for the fiscal year ending June 30, 1897.

Twenty-sixth and P streets NW.	Fifth and B streets SE.
I street, near Twenty-first NW.	Half, near T street SW.
Third street, between K and L NE.	Half and N streets SW.
Thirteenth and F streets NE.	Tenth and E streets SE.
Kendall street, Ivy City.	Eighth street, between Richmond and Savan-
K street, between Four-and-a-half and C SW.	nah.

TABLE XVI.—Deep wells.

Location.	Com- pleted.	Total depth.	Character of material penetrated.	Depth of rock penetrated.	Inference from chem- ical analysis of water.	Flow per minute when completed.	General condition at the close of the fiscal year.
Half and T streets SW.	1896. Sept. 1	<i>Ft.</i> 237	Sandy clay	<i>Ft.</i>	Best of con- ditions.	<i>Galls.</i> 10	Water very fine, but slight taste of iron; temperature 63°.
Fourteenth and D streets SW.	Sept. 25	247	Clay and rock	137	Very bad...	25	Abandoned.
Third and D streets SW.	Oct. 1	96	Clay and sand		Very fine	12	Water very fine, slight taste of iron; temperature 60°.
Second and Vir- ginia avenue SW.	Oct. 7	146	...do.....		Very good	12	Water very good; slight taste of iron; temperature 61°.
Tenth and South Carolina avenue SE.	Oct. 17	147	...do.....		...do.....	13	Water good, but strong taste of iron; not used be- cause of the close proximity of two surface wells; temperature 64°.
Fourteenth and C streets SE.	Oct. 26	149	...do.....		...do.....	12.5	Water very good, with only slight taste of iron; tem- perature 60°.

TABLE XVI.—*Deep wells*—Continued.

Location.	Com- pleted.	Total depth.	Character of material penetrated.	Depth of rock penetrated.	Inference from chem- ical analysis of water.	Flow per minute when completed.	General condition at the close of the fiscal year.
Third and M streets SE.	1896. Nov. 6	77. 223	Clay and sand	.....	Good	Galls. 12.5	Water very good, slight taste of iron; temperature 61°.
Second and North Carolina avenue, SE.	Nov. 18	232	.....do .....	.....	Very good	12	Water very good, but strong taste of iron; temperature 60°.
Sixth and B streets NW.	Nov. 28	140	Clay and rock	15 .....	.....	7.5	Water very good, slight taste of iron; temperature 60°.
Seventh and M streets NW.	Dec. 9	151	.....do	18	Good	6	.....
N. between Fourth and Fifth NW.	1897. Jan. 1	150	.....do	23 .....	.....do	10.5	Water very good, slight taste of iron; temperature 59°.
Twelfth and M streets NW.	Jan. 13	149	.....do	47	Very good	6.75	Water very fine, very slight taste of iron; tempera- ture 59°.
Fairview	Jan. 21	175	.....do .....	.....	.....do	15	Water good, but strong taste of iron; temperature 60°.
O. between Sixth and Seventh NW.	Mar. 13	201	.....do	101	Good	12	Water very good, slight taste of iron; temperature 59°.
Twentieth and Pennsylvania avenue NW.	Apr. 6	233	.....do	160 .....	.....do	1.5	Water discolored, strong taste of iron; temperature 59°.
Eleventh and East Capitol streets.	Apr. 19	181	Clay and sand	.....	Fair	10	Water very good, but slightly cloudy, and little taste of iron; tem- perature 59°.
Eighth, between Richmond and Savannah streets NW.	June 2	195	Clay and rock	120	Good	3	Water very fine; temperature 58°.
Staunton and El- vin avenues, Hillsdale.	June 15	185	Clay and sand	.....	.....do	8	Water muddy, and strong taste of iron; temperature 63°.
First and G streets NW.	June 24	141	.....do .....	.....	Very good	12	Water very good, slight taste of iron; temperature 61°.
Third and H streets NE.	June 30	157	.....do .....	.....	.....do	12	Do.

REPORT OF THE WATER REGISTRAR AND CHIEF CLERK OF THE WATER DEPARTMENT.

ENGINEER DEPARTMENT, WATER OFFICE,
Washington, D. C., August, 1897.

SIR: I have the honor to submit the following report of the operations of the revenue and inspection division of the water department for the year ending June 30, 1897:

Inspections made.....	51,525
Leaks found.....	3,136
Leaks repaired.....	2,974
Wastes found.....	14
Warrants procured.....	14
Fines paid in police court.....	\$14
Cases dismissed in police court.....	8
Bills delivered by inspectors.....	31,075
Certificates of water taxes issued.....	5,151
Meters set during the year.....	203
Receipts of the water department from all sources from July 1, 1896, to June 30, 1897.....	\$313,438.83

The following tables are submitted:

Table I.—Statements of receipts of the water department from all sources from July 1, 1878, to June 30, 1897, amounting to \$1,206,664.11.

Table II.—Statement of expenditures from July 1, 1878, to June 30, 1897, amounting to \$2,499,541.02.

Table III.—Statement of assessments and collections of water main tax from June 30, 1878, to July 1, 1897. Total amount assessed, \$1,093,605.66; total amount collected, \$708,321.66.

Table IV.—Statement of advances to the Treasurer of the United States from 1880 to 1897, amounting to \$1,609,957.02.

Table V.—Number of dwellings and tenement houses supplied with Potomac water and number of miscellaneous water takers.

Table VI.—Number, kind, and size of water meters in use to June 30, 1897.

Very respectfully,

JOHN J. BEALL, *Water Registrar.*

Capt. WILLIAM M. BLACK, U. S. A.,
Engineer Commissioner, District of Columbia.

TABLE I.—Statement of receipts of the water department, District of Columbia, from July 1, 1878, to June 30, 1897.

Fiscal year.	Balance on hand July 1, 1878.	Mains to Government Printing Office.	Water-main tax.		Interest on water-main tax.	
			Advertised.	Current.	Advertised.	Current.
Balance on hand July 1, 1878.....	\$16,800.42					
Received year ending June 30—						
1879.....			\$6,195.59	\$12,463.10	\$1,635.96	\$1,069.53
1880.....			10,248.87	11,920.81	3,457.43	1,340.18
1881.....			3,200.38	18,268.39	1,228.94	4,040.08
1882.....		\$2,800.00	4,017.92	5,467.96	2,686.07	362.34
1883.....		1,750.00	7,320.13	5,467.96	3,769.83	350.54
1884.....			3,563.12	8,700.53	2,385.59	122.42
1885.....			3,282.57	14,430.22	2,598.81	267.23
1886.....			3,564.81	20,631.30	2,343.44	622.49
1887.....			7,630.50	34,874.50	3,183.62	1,494.53
1888.....			8,005.53	19,939.91	5,120.55	598.86
1889.....			5,524.26	36,464.29	3,192.69	1,069.94
1890.....			9,267.61	29,257.28	5,364.04	1,557.62
1891.....			2,863.02	45,055.34	1,630.54	774.03
1892.....			4,562.67	90,415.38	2,064.56	1,764.74
1893.....			4,081.83	63,069.31	1,516.15	1,329.04
1894.....			3,764.01	80,407.07	1,273.32	1,531.01
1895.....			4,294.38	65,014.15	1,379.50	2,284.41
1896.....			500.65	26,071.07	372.98	662.87
1897.....			2,429.48	48,512.13	805.59	1,906.48
Total.....	16,800.42	4,550.00	94,917.33	613,404.33	45,408.52	23,198.42

TABLE I.—Statement of receipts of the water department, District of Columbia, etc.—Continued.

Fiscal year.	Water rents.	Taps.	Permits and other sources.	Total receipts.
Balance on hand July 1, 1878				\$16,899.42
Received year ending June 30—				
1879	\$43,574.24	\$1,986.00	\$2,130.25	69,053.67
1880	165,611.42	1,880.00	2,188.10	196,782.81
1881	109,737.83	1,851.00	1,915.72	149,542.34
1882	101,621.10	1,815.00	1,789.71	117,827.64
1883	65,752.24	2,193.00	2,188.72	88,792.62
1884	119,610.20	2,373.00	2,418.70	139,173.65
1885	118,528.20	3,402.00	3,076.00	145,585.17
1886	124,896.22	5,006.00	3,459.03	169,613.29
1887	138,539.43	6,012.00	4,846.45	196,581.18
1888	171,892.49	4,182.00	4,869.92	215,149.26
1889	189,407.39	5,190.00	5,576.16	246,451.13
1890	197,053.34	5,313.72	6,327.95	254,081.56
1891	209,664.29	5,640.00	6,869.79	272,497.01
1892	220,892.93	5,790.00	6,280.81	301,771.09
1893	225,911.25	7,307.09	7,931.71	321,176.38
1894	245,899.69	4,497.00	1,168.79	348,549.92
1895	251,872.71	4,537.55	2,100.00	331,483.10
1896	255,439.11	4,026.00	1,191.09	288,323.77
1897	253,500.16	5,157.00	1,128.28	313,438.83
Repayments during various fiscal years				39,855.31
Special assessment, service pipes				3,391.16
Total	3,219,431.30	78,348.36	67,406.96	4,206,661.11

TABLE II.—Expenditures.

Fiscal year.	Purchase of pump-house lot and erection of standpipe.	Extra clerical services making new water-rent and numerical books.	High service.	Material and labor, pumping expenses and pipe distribution.	Salaries, water department.	Contingent expenses.
Expended from July 1, 1878, to June 30, 1896	\$36,488.26	\$1,225.00	\$410,269.36	\$1,354,749.56	\$359,549.62	\$44,584.70
Expended 1897 on account of 1896				2,533.87		616.95
Expended 1897 on account of 1897			86,794.66	85,395.40	36,371.25	1,911.73
Total	36,488.26	1,225.00	497,064.02	1,442,678.83	395,920.87	37,113.38
Fiscal year.	Water rent refunded.	Water-main tax refunded.	Interest on water-main tax refunded.	Purchase of new pumping engines and boilers.	Water main to Government Printing Office.	Total expenditures.
Expended from July 1, 1878, to June 30, 1896	\$43,994.59	\$2,004.19	\$194.29	\$23,041.24	\$8,946.21	\$2,285,137.02
Expended 1897 on account of 1896						3,150.82
Expended 1897 on account of 1897	780.14					211,253.18
Total	44,774.73	2,004.19	194.29	23,041.24	8,946.21	2,499,541.02

OPERATIONS OF THE ENGINEER DEPARTMENT, D. C. 219

TABLE III.—Statement of assessments and collection of water-main tax from July 1, 1878, to June 30, 1897.

Fiscal year.	Amount assessed.	Duplicate payments and over payments.	Six per cent abatement.	Amount of tax canceled subsequent to July 1, 1878.	Amount collected July 1, 1878, to June 30, 1897.	Amount outstanding July 1, 1897, subject to exemption act of Mar. 3, 1881.	Amount of collectible tax outstanding July 1, 1897.
From June 30, 1878, to June 30, 1896.....	a \$1,000,131.68 b 363,473.98	\$2,104.45	\$23,899.05 1,847.71	\$198,892.14 161.71	\$657,380.05 50,941.61	\$4,113.78	\$117,951.11 40,522.05
Total	1,063,605.66	2,104.45	25,746.76	199,053.85	708,321.66	4,113.78	158,474.06

a of this amount \$94,124.78 was outstanding and uncollected July 1, 1878.
b of this amount \$223.75 is abatement allowed property owners on College Hill for amounts paid by them to R. A. Charles.

RECAPITULATION.

Total amount of assessments plus duplicate payments.....	\$1,095,710.11
Amount of abatement at 6 per cent.....	25,523.01
Amount of abatement allowed property owners on College Hill for amounts paid by them to R. A. Charles.....	223.75
Amount of tax canceled and struck off books since July 1, 1878: By order of Commissioners District of Columbia, decision of Supreme Court, etc., various dates.....	199,053.85
By amount subject to exemption, act March 3, 1881.....	4,113.78
Amount of tax collected from July 1, 1878, to June 30, 1897.....	708,321.66
Amount outstanding July 1, 1897—collectible tax.....	158,474.06
Total	1,095,710.11

TABLE IV.—Advances to Treasurer United States.

Fiscal year.	Interest and sinking fund water-stock bonds.	Interest and sinking fund 48-inch and Fourteenth street mains.	Interest and sinking fund increasing water supply.	Total interest and sinking fund.
Advanced to Treasurer United States, ex officio Commissioner of sinking fund, District of Columbia:				
1880.....	\$74,025.00			\$74,025.00
1881.....	74,123.77			74,123.77
1882.....	43,796.08			43,796.08
1883.....	44,610.00			44,610.00
1884.....	44,575.00			44,575.00
1885.....	44,610.00		\$13,686.23	58,296.23
1886.....	31,485.00		55,047.27	86,532.27
1887.....	57,735.00			57,735.00
1888.....	31,485.00		57,239.02	88,724.02
1889.....	44,610.00		76,655.60	121,265.60
1890.....	44,610.00		81,283.26	125,893.26
1891.....	44,610.00		71,164.21	115,774.21
1892.....	44,610.00		69,991.13	114,601.13
1893.....	44,610.00	\$20,713.89	68,817.14	134,141.03
1894.....	44,610.00	20,358.80	67,537.17	132,505.97
1895.....	44,610.00	20,063.70	62,052.27	126,665.97
1896.....	44,610.00	19,648.60	40,408.98	104,667.58
1897.....	40,927.06	7,457.00	13,640.75	62,024.81
Total	844,251.91	83,181.00	677,523.12	1,604,955.02

RECAPITULATION.

To amount collected, of which there has been deposited in the United States Treasury and credited to water fund the sum of	\$4,206,664.11
By amount expended from July 1, 1878, to June 30, 1897	2,499,541.02
By amount advanced to Treasurer United States, ex officio Commissioner sinking fund, District of Columbia, during said period	1,609,957.02
By amount collected on account of water-main tax and deposited to credit of general taxes, December 20, 1889.....	10.75
By amount collected on account of water rent July 29, 1890, and deposited to credit general taxes, August 14, 1890.....	2.00
Balance to credit of water fund, District of Columbia, July 1, 1897.....	97,153.32
Total	4,206,664.11

TABLE V.—Premises in the District of Columbia supplied with Potomac water.

Dwellings and tenements.	North-west.	North-east.	South-west.	South-east.	Total.
To June 30, 1896.....	24,724	6,697	4,951	4,806	41,177
Year ending June 30, 1897.....	671	251	167	470	1,559
Total.....	25,395	6,948	5,118	5,275	42,736

MISCELLANEOUS WATER TAKERS.

Asylums.....	3	2		1	6
Armories.....	7				7
Baseball grounds.....	2				2
Barber shops.....	169	8	7	6	180
Bakeries.....	57	8	18	9	92
Banks.....	16			2	18
Bar rooms.....	298	33	65	38	404
Boarding houses.....	112	34	1	6	153
Breweries.....	3	1		1	6
Bottling depots.....	8	3	6	1	18
Bookbinderies.....	4				4
Baths.....	4				4
Brickyards.....		2		3	5
Colleges.....	13	1			14
Churches.....	80	8	17	16	121
Cemeteries.....	3	1	1		5
Clubrooms.....	10			1	11
Convents.....	2	2			4
Car stables.....	12	5	3	4	24
Croquet grounds.....	3				3
Dining rooms.....	22				22
Dyehouses.....	20	4	2	2	28
Engine houses.....	9	2	1	2	14
Florists.....	3				3
Foundries.....	10	3			13
Factories.....	2			2	4
Gas engines.....	3	2	1		6
Greenhouses.....	6	2			12
Halls.....	41		3	3	61
Hospitals.....	9	2	1	1	13
Hotels.....	40				40
Laundries.....	40			4	49
Manufactories.....	17	2	4	2	25
Market houses.....	5	1		1	7
Mills.....	11		2	1	14
Museums.....			3		3
Motors.....	2				2
Orphan asylums.....	5				5
Offices.....	796	1	1	7	805
Printing houses.....	16	1			17
Police stations.....	5	2	1	1	9
Photograph galleries.....	26				26
Restaurants.....	232	3	5	19	259
Railway stations.....	3	1			4
Riding schools.....	2				2
Livery stables.....	58	4	1	6	69
Stables, private.....	842	78	18	34	972
Shops.....	116	8	9	9	152
Steam boilers.....	57	4	2	2	65
Steam engines.....	83	7	14	5	109
Slaughterhouses.....		2			2
Stores.....	1,425	39	74	114	1,652
Schools, public.....	50	18	4	9	81
Schools, private.....	27	2	2	1	32
Stone yards.....	12	4			17
Steamboat wharves.....			10		10
Theaters.....	6				6
Truck Company A.....		1			1
Truck Company B.....		1			1
Truck Company C.....	1				1
Truck Company D.....	1				1
Warehouses.....	48	6	13	6	73
Wood and coal yards.....	24	4	3	9	40
Total.....	4,861	313	295	345	5,804

TABLE V.—*Premises in the District of Columbia supplied with Potomac water—Continued.*

SUMMARY, BY LOCATION, OF MISCELLANEOUS WATER TAKERS.

Location.	Houses supplied with Potomac water.		Miscellaneous water takers.	
	Number.	Percent.	Number	Per cent.
Northwest section	25,305	59.45	4,861	83.75
North-east section	6,948	16.26	313	5.30
South-west section	5,118	11.98	235	5.09
South-east section	5,275	12.34	335	5.72
Total	42,736	-----	5,804	-----

REPORT OF THE SUPERINTENDENT OF LAMPS.

WASHINGTON, D. C., July 31, 1897.

The most important improvement in the street-lighting service during the year was the abandonment of the moonlight schedule and the introduction of an all-night every-night schedule. The change was authorized by the appropriation act for the fiscal year 1897, which provided for lighting the lamps every night on the average from forty-five minutes after sunset until forty-five minutes before sunrise. Another change, but one that does not seem to be in the line of improvement, was the reduction by Congress of the size of the burner for gas lamps from 6 to 5 cubic feet per hour. Although a corresponding reduction of 50 cents per lamp per year was made in the maximum price, the service was not improved.

One ornamental illuminated sign lamp of the Collis pattern, quite extensively used in New York, was purchased and placed at the corner of Fifteenth street and Pennsylvania avenue in front of the Riggs Bank. This style of lamp is the most satisfactory one so far found for designating corners where arc lamps are maintained. Some fifteen others will be purchased and put in place during 1898 on the most prominent corners, principally at street-railway transfer points and at hotels.

With a few minor exceptions the gas-lighting service has been well maintained. All the burners were replaced with new ones adjusted for 5 cubic feet, the expense of the change being borne by the companies. All lamp-posts and lanterns were painted by the companies, as required by the terms of their contracts with the District. Boulevard lamps have been placed on Sixteenth street from Lafayette Square to Florida avenue and extended on Massachusetts avenue and Connecticut avenue.

Number of gas lamps moved and reset	51
Number of broken posts reerected	27
Number of unused posts taken down	118
Number of new posts erected	192

The naphtha-lighting service has been extended in the suburbs to Congress Heights, Tacoma Park, Bennings, Brookland, Langdon, Meridian Hill, and Sherman avenue and adjacent streets. All the lamps that were changed from gas during the year 1896 were changed back to naphtha with the exception of those on the Bladensburg road.

Number of naphtha lamps moved and reset	51
Number of broken posts reerected	3
Number of unused posts taken down	61
Number of new posts erected	229

The incandescent lighting service has been extended on the Tennallytown road to the District line, the Aqueduct Bridge lighted, and the 100 lamps in Eckington, formerly maintained by private parties, now controlled by the District.

Schedule for gas lighting, 3,579 hours and 9 minutes, to which is to be added one-half hour each night allowed the companies for lighting; price per lamp per annum, \$20, including lighting, extinguishing, repairing, painting, and cleaning; consumption, 5 cubic feet per hour; contractors, Washington Gas Light Company and Georgetown Gas Light Company.

Schedule for naphtha lighting, 3,760 hours per annum, no allowance being made

for lighting; price per lamp per annum, \$20, including lighting, extinguishing, repairing, painting, and cleaning; candle power of burner, 18; Wellington plate burner used; contractors, Pennsylvania Globe Gas Light Company of Philadelphia.

Schedule for incandescent lighting, 3,760 hours per annum; price per lamp per annum, \$20; candle power, 25; contractors, Potomac Electric Power Company.

The following lists show the location of all new gas, naphtha, and incandescent lamps established during the year:

LOCATION OF NEW GAS LAMPS ERECTED IN 1897.

Northwest.—One on Liberty street, between Thirteenth and Fourteenth streets; 2 on Vermont avenue, between R and S streets; 1 on L street, between Twenty-second and Twenty-third streets; 1 on New Hampshire avenue, between N and O streets; 2 on Tenth street, between Q and R streets; 1 at southeast corner Florida and New Jersey avenue; 1 on south side F street, between Second and Third streets; 2 on south side N street, between Twenty-first and Twenty-second streets; 5 on Willard street, between Seventeenth and Eighteenth streets; 2 on Seventeenth street, between T and U streets; 1 at corner Seventeenth and U streets; 2 on Cedar place, between Eighteenth and Nineteenth streets; 1 on Oregon avenue, between New Hampshire avenue and Eighteenth street; 1 at corner Q and Marion streets; 1 at corner P and Marion streets; 2 on Morgan street, between New Jersey avenue and Kirby street; 2 on New Jersey avenue, between M and Morgan streets; 1 at corner Third street and New York avenue; 3 on C street, between Fourteenth and Fifteenth streets; 2 on D street, between Fourteenth and Fifteenth streets; 1 in front of Truck B, New Hampshire avenue; 2 on L street, between Twenty-fourth and Twenty-fifth streets; 1 on north side Rhode Island avenue, between Eleventh and Twelfth streets; 2 on Seventeenth street, between New York avenue and E street; 2 on New York avenue, between Seventeenth and Eighteenth streets; 3 in alley between I, K, Sixteenth and Seventeenth streets; 1 on Johnson avenue, between R and S streets; 1 on Twenty-first street, between O and P streets; 1 on T street, between Seventh and Eighth streets.

Northeast.—One at southeast corner Florida avenue and Eleventh street; 1 on Eighth street, between I and K streets; 2 on Emerson street, between Thirteenth and Fourteenth streets.

Southwest.—One on D street, between Eighth and Ninth streets; 1 on E street, between Eighth and Ninth streets; 2 on Thirteen-and-a-half street, between C and D streets; 2 on Tenth street, between F and G streets.

Southeast.—Two on Ivy street, between New Jersey avenue and South Capitol street; 4 on Kentucky avenue, between A and B streets; 1 at corner First and Heckman streets; 1 at corner Second and Heckman streets; 2 on Heckman street, between First and Second streets.

County.—One at corner Brightwood avenue and Steuben street; 10 on Brightwood avenue, between Piney Branch road and Military road; 1 at corner Brightwood avenue and Sheridan street; 1 at corner Brightwood avenue and Wallach street; 1 at corner Brightwood avenue and Princeton street; 1 at corner Brightwood avenue and Bismarck street; 4 on east side Eighteenth street, between Florida avenue and Columbia road; 3 on Belmont avenue, between Eighteenth street and Columbia road; 1 at corner Belmont avenue and Eighteenth street; 1 on Eighteenth street, between Belmont and Kalorama avenues; 1 at corner Eighteenth street and Kalorama avenue; 1 on Kalorama avenue, between Eighteenth street and Columbia road; 2 on Wyoming avenue, between Eighteenth and Nineteenth streets; 3 on Le Roy place, between Phelps place and Connecticut avenue; 3 on Bancroft place, between Phelps place and Connecticut avenue; 1 on Connecticut avenue, between S street and Bancroft place; 1 at corner Florida avenue and S street; 1 at corner Florida avenue and Connecticut avenue; 2 on S street, between Florida avenue and Phelps place; 2 on Phelps place, between S street and Bancroft place; 2 on Phelps place, between Le Roy place and California avenue; 1 at corner Thirteenth and Yale streets; 1 on west side Thirteenth street, between Yale and Princeton streets; 1 at corner Thirteenth and Columbia streets; 1 on Thirteenth street, between Columbia and Kenesaw streets; 2 on Kenyon street, between Thirteenth and Fourteenth streets; 1 at corner Thirteenth and Kenyon streets; 1 on Kenyon street, between Twelfth and Thirteenth streets; 1 on Kenesaw street, between Twelfth and Thirteenth streets; 1 on Thirteenth street, between Kenesaw and Columbia streets; 3 on Columbia street, between Thirteenth and Fourteenth streets; 2 on Thirteenth street, between Harvard and Princeton streets; 1 at corner Thirteenth and Princeton streets; 2 on Yale street, between Thirteenth and Fourteenth streets; 2 on Thirteenth street, between Clifton and Roanoke streets; 2 on Thirteenth street, between Kenesaw and Kenyon streets; 1 on Thirteenth street, between Columbia

and Harvard streets; 1 at corner Thirteenth and Harvard streets; 3 on Harvard street, between Thirteenth and Fourteenth streets; 2 on Princeton street, between Thirteenth and Fourteenth streets; 1 on Princeton street, between Twelfth and Thirteenth streets; 2 on Yale street, between Twelfth and Thirteenth streets; 1 on Thirteenth street, between Yale and Princeton streets; 2 on Thirteenth street, between Yale and Roanoke streets; 1 at corner Thirteenth and Roanoke streets; 2 on Roanoke street, between Thirteenth and Fourteenth streets; 1 on Roanoke street, between Twelfth and Thirteenth streets; 1 on Kenesaw street, between Twelfth and Thirteenth streets; 1 on Lydecker avenue, between Holmead avenue and Thirteenth street; 2 on Holmead avenue, between Lydecker avenue and Lamar place; 4 on Thirteenth street, north of Lamar place; 1 on corner Morgan avenue and Lamar place; 3 on Morgan avenue, between Lamar place and Lydecker avenue; 2 on Huntington place, between Fourteenth street and University place; 1 on University place, between Huntington and Euclid places; 1 at corner University and Euclid places; 2 on University place, between Euclid and Welling places; 1 at corner University and Welling places; 16 in Takoma Park; 1 on Le Droit avenue, between Florida avenue and S street; 1 at corner Le Droit avenue and Seaton street; 1 at corner Le Droit avenue and T street; 1 at corner Le Droit and Rhode Island avenues; 1 on Le Droit avenue, between T and U streets; 1 on Le Droit avenue, between U and Elm streets; 2 on Twenty-second street, between Florida avenue and R street; 1 at corner Twenty-second and R streets; 2 on R street, between Twenty-second and Twenty-third streets; 1 on R street, between Florida avenue and Twenty-second street; 1 on Fillmore street, between Washington and Jefferson streets.

LOCATION OF NEW NAPHTHA LAMPS ERECTED IN 1897.

Twenty-five on Nichols avenue and Congress Heights; 12 on Piney Branch road, from Brightwood avenue to Takoma Park; 47 at Bennings and Bennings road, 17 on Bladensburg road, 23 in Brookland, 20 in Langdon, 2 on Le Droit avenue, between Elm and Wilson streets; 10 on Superior street, from Sixteenth street to Champlain avenue; 7 on Prospect street, between Sixteenth and Superior streets; 3 on Crescent street, between Sixteenth and Prospect streets; 3 on Central street, between Superior and Erie streets; 34 on Sherman avenue, from Grant to Whitney avenues; 2 on Bismarck street, between Sherman and Brightwood avenues; 4 on Yale street, between Sherman avenue and Thirteenth street; 4 on Princeton street, between Sherman and Brightwood avenues; 4 on Steuben street, between Sherman and Brightwood avenues; 4 on Wallach street, between Sherman and Brightwood avenues; 4 on Sheridan street, between Sherman and Brightwood avenues; 4 on Kenesaw street, between Sherman avenue and Thirteenth street.

LOCATION OF INCANDESCENT LAMPS ERECTED IN 1897.

One hundred in Eckington, 12 on Aqueduct Bridge, 20 on Tennallytown road, from Woodley Inn to Tennallytown; 12 on Tennallytown road, from Tennallytown to District line.

ELECTRIC LIGHTING.

An increase in the appropriation for arc lighting and a reduction in price, as a result of the competition between the United States Electric Lighting Company and the Potomac Electric Power Company, enabled the department to establish 160 additional lamps. A suit brought by the former company to enjoin the Commissioners and the latter company from entering into a contract for a portion of the new lamps prevented the District from erecting them until February, 1897. The majority of the new lamps were in operation, however, in time for the inaugural ceremonies. This long delay in getting the lamps up has left a large balance in the appropriation, which must revert to the Treasury unless Congress can be prevailed upon to apply it to electric lighting next year. This balance can well be used in making many necessary extensions to the service.

The arc lamps have burned every night from forty-five minutes after sunset until forty-five minutes before sunrise, as required by law, a total of 3,760 hours per annum. I would recommend that this be increased to 3,850 hours by lighting the lamps fifteen minutes earlier in the evening. On cloudy nights in particular it is quite dark when the time for lighting arrives, and as most of the lamps are along rapid transit lines, they should be in operation earlier.

The number and distribution of the lamps were as follows: United States Electric Lighting Company, 363 lamps in Washington, at \$109.50 per lamp per annum; Potomac Electric Power Company, 121 lamps in Washington, at \$100 per lamp

per annum; Potomac Electric Power Company, 24 lamps in Georgetown, at \$94.90 per lamp per annum.

The following table shows the location of the new arc lamps established during the year:

LOCATION OF NEW ARC LAMPS ESTABLISHED IN 1897.

Maintained by the Potomac Electric Power Company.—Seventeen on New York avenue, from Fourteenth to Ninth street NW.; 29 on Ninth street, from Massachusetts to Florida avenue; 6 on Florida avenue, between Ninth and Tenth streets; 3 on Florida avenue, from Seventh to Ninth street; 12 on Fifth street, from D to I street NW.; 4 on D street, between Fourth and Fifth streets NW.; 3 on Missouri avenue, between Four-and-a-half and Sixth streets NW.; 38 on Four-and-a-half street, from Missouri avenue to P street SW.; 4 on L street, between Four-and-a-half and Seventh streets SW.; 2 on P street, between Four-and-a-half and Water streets SW.; 3 on north side Pennsylvania avenue, between Madison and Jackson places.

Maintained by United States Electric Lighting Company.—One on north side H street, between Delaware avenue and Second street NE.; 1 on north side H street, between Second and Third streets NE.; 1 on north side H street, between Third and Fourth streets NE.; 24 on H street, from Fifth to Fifteenth street NE.; 2 on F street, between Sixth and Seventh streets NW.; 1 at corner Sixth and F streets NW.; 2 on G street, between Sixth and Seventh streets NW.; 1 at corner Sixth and G streets NW.; 1 on G street, between Fifth and Sixth streets NW.; 3 on G street, between Fourth and Fifth streets NW.; 1 at southwest corner Ninth street and New York avenue NW.; 1 at southeast corner Fourteenth street and New York avenue NW.

The following table shows the number of lamps of all kinds in use on the 1st day of July, 1897, as compared with the 1st day of July, 1896:

	1896.	1897.
Gas	5,875	6,053
Collis		1
Naphtha	1,064	1,077
Incandescent	70	214
Arc	348	508
Total	7,357	7,853

Increase during the year, 496.

The changes have been as follows:

	Relighted.	Added.	Discontinued.
Gas	32	425	279
Collis		1	
Naphtha	10	229	226
Incandescent		144	
Arc		160	
Total	42	959	505

Increase during the year, 496.

It is urgently recommended that Congress be requested to set aside about \$2,000 or \$3,000 of the street-lighting fund to be expended by the Commissioners for experimental lighting, with the view of improving and increasing the efficiency of the service. Under the present law, which fixes the consumption of gas lamps at 5 cubic feet per hour, Welsbach or other improved burners can not be used. Welsbach lights are meeting with favor in many large cities, where they give a splendid service. In Washington they would be of great value in lighting those resident streets traversed by street railway lines, since considerable objection has been raised to the introduction of arc lamps in such sections. Welsbach burners consume less gas and give more light than the ordinary gas-burner. They are, however, more expensive to maintain, it being impossible to operate them at the maximum of \$20 per lamp fixed by the appropriation act. For this reason, and because they do not burn 5 cubic feet, they have not been introduced. Were this

special proviso made in the law, such lamps could be tried, and if proved satisfactory could be provided for permanently.

The recommendations of previous years for a clerk in this office and for an increase in the salary of the superintendent are made again, with the statement that the increasing amount of work required of this department renders such additions imperative.

Respectfully submitted.

H. D. MANKIN,
Superintendent of Lamps.

Capt. W. M. BLACK,
Engineer Commissioner, District of Columbia.
(Through Capt. Edward Burr.)

Financial statement for the fiscal year 1897.

STREET LIGHTING.

RECEIPTS.

Appropriation	\$150,000.00
Received from Baltimore and Potomac Railroad Company for maintenance of lamps along their tracks	3,067.21
Received from Baltimore and Ohio Railroad Company for maintenance of lamps along their tracks	371.17
Total	153,438.38

EXPENDITURES.

Gas lighting:		
Washington Gaslight Company	\$112,178.11	
Deductions for defective service	113.23	
		112,064.88
Georgetown Gaslight Company	9,020.04	
Deductions for defective service	66.95	
		8,853.09
Naphtha lighting:		
Pennsylvania Globe Gaslight Company	21,449.34	
Deductions for defective service	68.92	
		21,380.42
Incandescent lighting:		
Potomac Electric Power Company	4,187.57	
Deductions for defective service	188.17	
		3,999.40
Erecting new lamps:		
Washington Gaslight Company	1,056.00	
Pennsylvania Globe Gaslight Company	460.00	
		1,516.00
Moving and resetting lamps:		
Washington Gaslight Company	199.00	
Georgetown Gaslight Company	8.00	
Pennsylvania Globe Gaslight Company	102.00	
		309.00
Reerecting broken posts:		
Washington Gaslight Company	55.00	
Georgetown Gaslight Company	12.50	
Pennsylvania Globe Gaslight Company	6.00	
		73.50
Taking down old posts:		
Washington Gas Light Company	177.00	
Pennsylvania Globe Gas Light Company	61.00	
		238.00
Changing one lamp from naphtha to gas		5.50
Lamp-posts		1,686.72
Cross-arms		25.00
Square copper lanterns		1,260.00

EXPENDITURES—continued.

Boulevard lanterns	\$352.91
Street sign frames	131.85
Glass street signs	248.93
Collis corner lamp	27.45
Brackets for street-sign frames	9.60
Brackets for lamps	21.90
Domes and globes for boulevard lamps	36.90
Paints	28.81
Services of painter	90.81
Lumber for shelves	17.88
Services of carpenter	13.50
Repairing cuts in pavements	284.03
Carting lanterns, frames, etc.	369.87
Carting lamp-posts	241.12
Sundries	18.12
Total	153,305.19

ELECTRIC LIGHTING.

RECEIPTS.

Appropriation	\$50,000.00
Received from Baltimore and Potomac Railroad for maintaining lamps along their tracks	394.39
Total	50,394.39

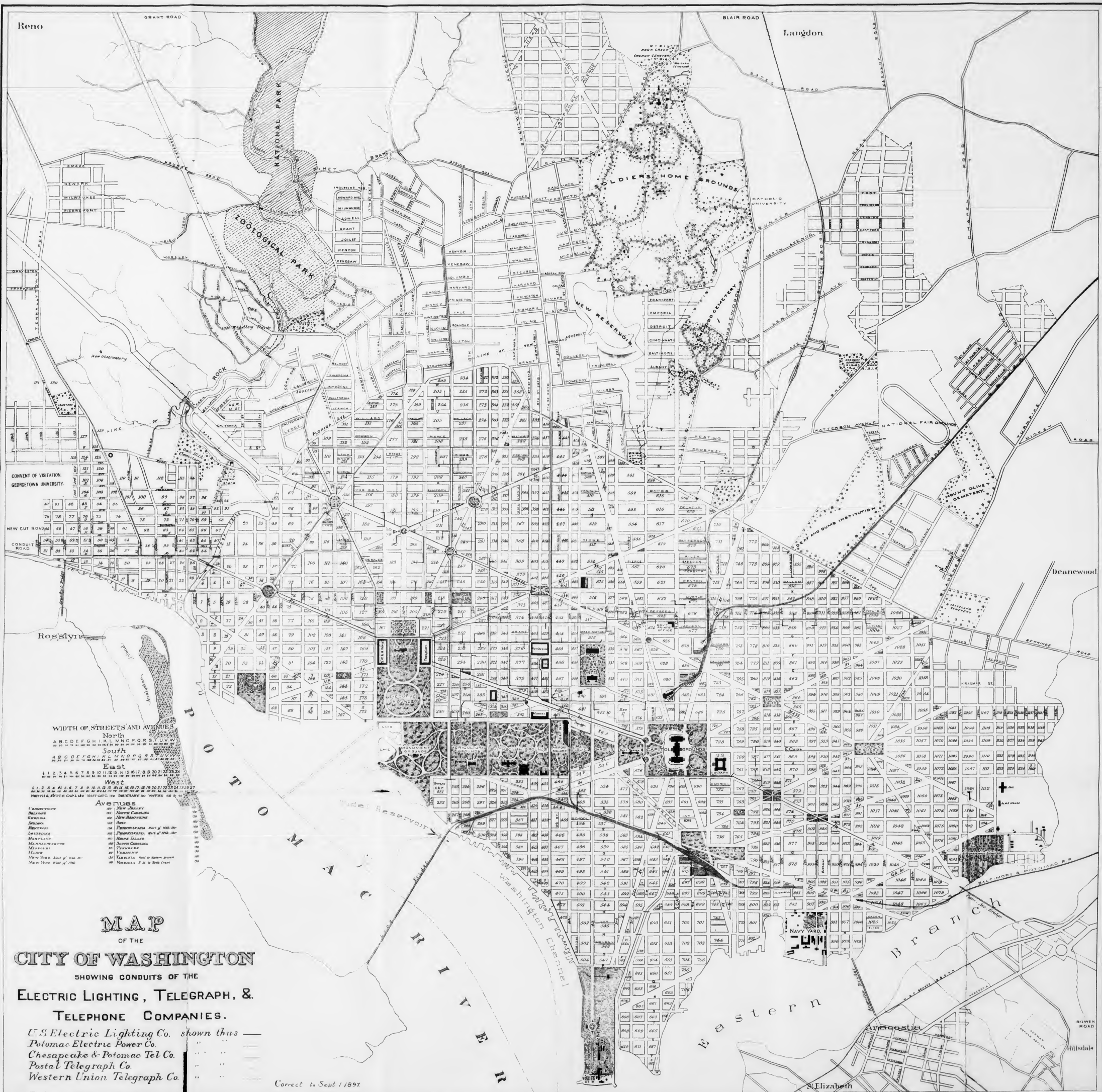
EXPENDITURES.

Arc lighting:	
United States Electric Lighting Company	\$38,273.81
Deductions for defective service	162.35
	\$38,111.46
Potomac Electric Power Company	5,122.97
Deductions for defective service	12.69
	5,110.28
Expenses of inspection:	
Salaries of inspectors	2,654.50
Repairs to bicycles	95.35
Testing instruments	311.56
	3,061.41
Total	46,283.15

REPORT ON ELECTRIC WIRES AND CONDUITS.

WASHINGTON, D. C., August 6, 1897.

The increasing amount of electrical work in the District, the extensions and additions to existing telegraph, telephone, electric-light, power, and railway lines, both overhead and underground, and the introduction of new companies with new methods and new construction, have created a demand for closer inspection and supervision on the part of the District. No department exists in the District government corresponding to the electrical bureau of Philadelphia, the electrical subway commission of Brooklyn, the wire department of Boston, and similar departments in the other large cities. The need for such a branch of the local government has been felt more than ever during the past year. The work of inspection of the various classes of construction mentioned above has heretofore been given to different departments, with no systematic method to be followed out, nor no accurate records to be kept. An attempt was made to consolidate the work by dividing it between the street-lighting department and one branch of the surface department, the former controlling all matters pertaining to electric-light wires and all underground conduits, the latter all telegraph and telephone wires and poles. This division of the work was necessary on account of the numerous



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other duties each department had to perform, but the overhead and the underground systems are so closely allied that such an assignment is undesirable and unsatisfactory.

It is urgently recommended that Congress be asked to make such provision for this work that it can be brought under one department not already overburdened with other duties, by creating a new department if necessary. The operations of such a department would cover a wide field, which would embrace all public electric-lighting, overhead-wire, and underground conduit systems; District fire-alarm and police telegraph and telephone service; electric-railway systems (both overhead and underground), electric-meter testing and inspection, the question of the electrolytic corrosion of underground pipes, and in fact all matters of an electrical nature. The need for this department was recognized several years ago, when the electrical commission made their report to Congress in 1891. Their recommendations were as follows (see House Ex. Doc. No. 15, Fifty-second Congress, first session, pp. 19 and 20):

"We recommend the creation of a permanent electrical bureau to supervise all electrical work in the District and to enforce all regulations relating thereto. Its duties should be:

"To have charge of the fire-alarm and police-signal service.

"To direct and supervise the construction of electrical conduits, the erection of poles, and placing of wires and all other appliances for electrical service by the District government, and to inspect the electrical appliances belonging to private individuals or corporations under permits or franchises.

"To make periodical inspections and reports of all electrical appliances in the District."

CONDUITS.

According to law the Commissioners advertised in June, 1896, for bids for electric arc lighting for the fiscal year 1897. Two proposals were received, one a formal bid from the Potomac Electric Power Company, offering to maintain all arc lamps west of Rock Creek at \$94.90 per lamp per annum and all additional lamps east of Rock Creek at \$100, the other an informal bid from the United States Electric Lighting Company, claiming the exclusive right to maintain public arc lamps in the District and offering to do the work at the maximum price allowed by the law, namely, \$109.50. Among the streets on which new lamps were to be established were several in which neither company had conduits, and as all public lighting is required to be done by underground wires new conduits had to be constructed. The Potomac Electric Power Company, whose operations had previously been confined to that portion of the District west of Rock Creek, claimed that they had the right under the existing law to build the necessary conduits for this extension of the public service, since they were the lowest bidders.

The Commissioners, taking this view of the case, attempted to enter into contract with the company for the performance of this work, but were prevented from doing so by a temporary injunction obtained by the United States Company. After several months' delay a decision was rendered sustaining the Commissioners and refusing a permanent injunction. An appeal to the court of appeals resulted in a further confirmation of the right of the Commissioners to issue permits for the new construction. Contract with the Potomac Company was executed December 17, 1896, and permits issued for opening the streets on December 21, 1896. Work was begun immediately on M street at Rock Creek and rapidly pushed to completion. As the work progressed four gangs were employed on different sections covered by the permits, necessitating the employment of four inspectors to supervise the construction in the interests of the District. The services of these men were paid for by the Potomac Electric Power Company.

The greater portion of the conduit was composed of single terra-cotta pipe, of rectangular cross section, placed on a bed of concrete 4 inches thick, with 3 inches of concrete on both sides and top. A few sections of cement-lined iron pipe were laid, as well as a short length of four-way terra-cotta pipe. Work was begun on December 24 and finished on February 27.

The following table shows the length of conduit laid under these permits:

Length of conduit laid by Potomac Electric Power Company, in Washington, east of Rock Creek, under permits dated December 21 and December 31, 1896, January 11, January 30, and February 18, 1897.

Location.	Number of ducts.	Length of conduit.	Length of duct.	Public arc connection.		Manholes.	
				Number.	Feet.	Large.	Small
		<i>Feet.</i>	<i>Feet.</i>				
M street, from Rock Creek to Eighteenth street.....	12	3,639	43,668			12	
Eighteenth street, from M to I street.....	12	1,574	18,888			5	
I street, from Eighteenth street to Connecticut avenue.....	12	904	10,848			3	
Connecticut avenue, from I to H street.....	12	495	5,940			2	
Jackson place, from H street to Pennsylvania avenue.....	12	445	5,340			1	
Pennsylvania avenue, from Jackson place to New York avenue.....	12	1,150	13,800	3	33	4	
New York avenue, from Fifteenth to Ninth street.....	12	3,070	36,840	16	502	10	12
Thirteenth street, from H to K street.....	6	800	4,800			3	
Mount Vernon place, from Seventh to Ninth street.....	12	584	7,008			4	
Ninth street, from Mount Vernon place to U street.....	12	5,612	67,344	28	724	13	17
Florida avenue, from U to Tenth street.....	12	1,226	14,712	7	193	7	
Florida avenue, from Seventh to Ninth street.....	12	642	7,704	3	33	5	2
Massachusetts avenue, from Seventh to Fifth street.....	12	910	10,920			4	
Fifth street, from Massachusetts avenue to D street.....	12	2,248	26,976	12	336	8	6
D street, from Fifth to Four-and-a-half street.....	12	343	4,116	1	7	1	
D street, from Four-and-a-half to Fourth street.....	9	389	3,501	2	14	1	3
Indiana avenue, from Fourth to I street.....	9	1,156	10,404			6	
C street, from First street west to Second street east.....	9	2,515	22,635			10	6
Second street, from C to East Capitol street.....	6	1,442	8,652			4	
East Capitol street, from Second to Eleventh street.....	6	3,472	20,832			10	3
Four-and-a-half street, from D street N. to P street S.....	12	8,443	101,316	39	1,124	24	25
P street, from Four-and-a-half to Water street.....	6	436	2,616	2	10	1	1
L street, from Four-and-a-half to Seventh street.....	6	1,229	7,374	4	49	2	3
Missouri avenue, from Four-and-a-half to Sixth street.....	6	618	3,708	3	44	1	2
Total.....		43,342	459,942	120	3,069	141	80

Length of conduit in miles 8.21
Length of duct in miles 87.11

Kind of conduit laid east of Rock Creek.

Description of conduit.	Feet of conduit.	Feet of duct.	Miles of duct.
Cement-lined iron pipe.....	1,104	13,248	2.51
Potomac single terra-cotta pipe.....	2,043	24,516	4.64
Potomac multiple terra-cotta pipe.....	87	696	.13
Camp single terra-cotta pipe.....	40,108	421,482	79.83
Total.....	43,342	459,942	87.11

Under authority granted by the appropriation act for the year 1897 the Commissioners issued permits to the Potomac Electric Power Company to construct 14 miles of conduits in Georgetown, in addition to that necessary to place their exist-

ing overhead lines underground. The following table shows the location and length of conduit laid under these permits:

Length of conduit laid by Potomac Electric Power Company in Washington, west of Rock Creek, under permits dated July 14, 1896, and February 24, 1897.

Location.	Num-ber of ducts.	Length of con-duit.	Length of duct.	Public arc con-nections.		Manholes.	
				Num-ber.	Feet.	Large.	Small.
Thirty-third street, between power house and M street.....	16	<i>Feet.</i> 379	<i>Feet.</i> 6,064			2	
Thirty-second street, between M and U streets.....	12	3,357	39,984	6	189	10	11
Thirty-second street, between U street and Tunlaw road.....	9	3,228	29,052			11	
Thirty-second street, between Tunlaw road and city limits.....	6	679	4,074			3	
U street, between Thirty-second street and Observatory Place.....	6	697	4,182			3	
M street, between Thirty-third and Thirty-second streets.....	16	935	14,960	3	25	3	6
M street, between Thirty-third and Thirty-sixth streets.....	12	1,258	15,096	5	45	7	7
M street, between Thirty-second street and Rock Creek.....	12	2,000	24,000	9	285	7	11
Thirty-first street, between M street and post-office a.....	2	245	490	1	245		1
Total.....		12,778	138,502	24	789	46	36

a Public arc light connection not included in total.

Length of conduit in miles..... 2.37
Length of duct in miles..... 26.02

Kind of conduit laid west of Rock Creek.

Description.	Feet of conduit.	Feet of duct.
Cement-lined iron pipe.....	8,149	97,354
Camp single terra cotta pipe.....	4,384	40,058
Total.....	12,533	137,412

During May and June the United States Electric Lighting Company extended their conduits to Columbia Heights under authority granted by the appropriation act for 1897 and under permits dated May 15 and June 1, 1897. Potomac four-way terra-cotta pipe was laid on both sides of Fourteenth street from Florida avenue to Whitney avenue, with a branch conduit on Clifton street between Thirteenth and Fourteenth streets. An inspector from this office was detailed temporarily to supervise the work, his services being paid for by the company. The following table shows the conduit laid under these permits:

Length of conduit laid by United States Electric Lighting Company under permits dated May 15 and June 1, 1897.

Location.	Num-ber of ducts.	Feet of conduit.	Feet of duct.	Manholes.	
				Large.	Small.
Fourteenth street, from Florida avenue to Whitney avenue.....	4	6,475.4	25,901.6	25	21
Clifton street, between Thirteenth and Fourteenth streets.....	4	643.8	2,575.2	2	5
Total.....		7,119.2	28,476.8	27	26

Length of conduit in miles..... 1.34
Length of duct in miles..... 5.39

Under the authority granted by the same act permits were issued to the United States Electric Lighting Company to extend their conduits on Sixteenth street from S to Prospect street, with the intention of ultimately reaching Mount Pleasant as soon as the grade of Sixteenth street north of Florida avenue is established and the street opened to its full width; also, to lay conduits out Columbia road, Connecticut avenue extended, and side streets in Washington Heights.

Under these permits the following conduits were laid:

Location.	Number of ducts.	Feet of conduit.	Feet of duct.	Manholes.		Hand-holes.
				Large.	Medium.	
Sixteenth street, from S to Prospect street	4	2,269	9,076	8	5	1
Connecticut avenue and Columbia road	4	1,996.7	7,988.8	9	2	3
Wyoming avenue	2	944.9	1,889.8	2	1	6
Total		5,210.6	18,954.6	19	8	10
Miles of conduit						.987
Miles of duct						3.59

Upon their application, a permit was granted on June 2, 1897, to the Chesapeake and Potomac Telephone Company to repair their conduits on Fifteenth street, from manhole between O and P streets to and into alley between R and S streets NW., square 207; from east side of Fourteenth street, between G street and New York avenue, west on New York and Pennsylvania avenues to Seventeenth street, thence to G street, thence to cable pole near corner of Twenty-second and G streets, with branch lines into alleys in squares 121, 160, 166, and 214.

This repairing consisted in abandoning the old cables laid in asphalt along the above routes, taking out the portions uncovered, and substituting multiple-duct terra-cotta pipe, thereby changing that portion of their underground construction from a solid to a drawing-in system. The work was supervised by an inspector from this office, whose services were paid for by the company. Work on the Fifteenth-street branch was begun on June 7, 1897, and finished on June 25, 1897. On the other branch it was begun June 12, 1897, and completed July 30, 1897.

The following table shows the length of conduit laid under this permit.

Length of conduit laid by the Chesapeake and Potomac Telephone Company under permits dated June 2, 1897.

Location.	Number of ducts.	Feet of conduit.	Feet of duct.	Manholes.	
				Large.	Small.
Fifteenth street, from O to S street	6	1,543.4	9,260.4	5	
Into alley, square 207	1	169.6	169.6		
New York avenue, from Fourteenth to Fifteenth street	8	560.6	4,484.8	5	
Pennsylvania avenue, from Fifteenth to Seventeenth street	8	1,675.9	13,407.2	7	
Seventeenth street, between Pennsylvania avenue and G street	8	224.3	1,794.4	1	
G street, between Seventeenth and Nineteenth streets	8	1,159	9,272	5	
G street, between Nineteenth and Twenty-second streets	6	1,558.5	9,351	4	
Nineteenth street, between F and G streets	2	150.5	301		1
Into alley, square 121	1	133	133		
Into alley, square 160	1	146	146.2		
Pennsylvania avenue, between Seventeenth and Eighteenth streets	2	373.4	746.8	2	
Into alley, square 166	1	86	86		
Into alley, square 214	1	247	247		
Total		8,027.2	49,399.4	29	1

Length of conduit in miles

Length of duct in miles

1.52
9.35

Conduits of the Chesapeake and Potomac Telephone Company, May 1, 1897. a

MAIN CONDUITS.				
Conduit.		Num- ber of ducts.	Duct.	
Feet.	Inches.		Feet.	Inches.
76	0	72	5,472	0
176	3	64	11,280	0
748	9	56	41,930	0
1,534	5	40	61,376	8
26	0	36	936	0
465	6	32	14,896	0
304	6	25	7,612	0
2,072	1	24	49,730	0
26	0	20	520	0
1,576	3	18	28,372	6
636	0	17	10,812	0
5,824	0	16	93,196	0
212	0	13	2,756	0
4,963	2	12	59,558	0
114	0	9	1,026	0
14,470	2½	8	115,761	8
82	6	7	577	6
20,009	6	6	120,057	0
65	0	4	262	0
53,357	4½		626,131	10
BRANCH CONDUITS.				
2,943	7	2	5,887	2
14,616	6	1	14,616	6
17,560	1		20,563	8

a Furnished by the company.

Seventy-one thousand nine hundred and seventeen feet five and one-half inches of conduit, containing 646,635 feet 6 inches of duct; 13.5 miles of conduit, containing 122.5 miles of duct.

The removal of the main offices of the Postal Telegraph-Cable Company from F street, between Fourteenth and Fifteenth streets NW., to the north side of Pennsylvania avenue near Fourteenth street, necessitated building a short additional length of conduit to connect their underground system with their new offices. Under permit issued September 17, 1897, they laid 589 feet of four-duct terra-cotta conduit.

During the year a complete set of maps, covering those portions of the District in which there are underground conduits, has been made, drawn to a scale of 50 feet to the inch, on which the majority of the conduits have been carefully plotted. These maps form an invaluable record, and will be kept up to date.

The following tables are made up from data taken from these maps and from information furnished by the respective companies:

Summary of conduits, September 1, 1897.

Company.	Conduit.		Duct.	
	Feet.	Miles.	Feet.	Miles.
United States Electric Lighting Co.:				
Inside city limits	215,320	40.78	(a)	(a)
Outside city limits	12,329.8	2.33	47,431.4	8.98
Potomac Electric Power Co.	55,875	10.58	597,354	113.13
Chesapeake and Potomac Telephone Co.	79,944.7	15.02	696,634.9	131.82
Postal Telegraph-Cable Co.	14,074	2.66	14,074	2.66
Western Union Telegraph Co.	4,105	.77	4,105	.77
Metropolitan Railroad Co. b				

a Record not complete.*b* No record.

OVERHEAD WIRES.

The appropriation act of March 4, 1897, recognized all existing overhead wires (except those west of Rock Creek inside of the fire limits) and legalized them by authorizing the Commissioners to permit connections to be made to them. In order to complete the record of the wires as far as they relate to electric lighting and power, two men from the United States Electric Lighting Company and an inspector from this office made a thorough inspection of the overhead system of that company and carefully noted each wire, whether main, feeder, or service. These were plotted on a set of tracings on a scale of 50 feet to the inch, and upon completion were signed by Captain Burr, assistant to the Engineer Commissioner for the District, and by Mr. A. A. Thomas, president of the United States Electric Lighting Company, for the company. These maps will not be altered or changed in any way, but will be kept as a permanent record of the wires legalized by the above-mentioned act and in existence on the date of its passage.

A similar set of maps, though on a scale of 100 feet to the inch, has also been made of the wires of the Potomac Electric Power Company, and will be similarly certified to and preserved.

The following table shows the length of overhead wires belonging to the two electric-light companies, and in existence on July 1, 1897:

Length of overhead electric light and power wires in existence July 1, 1897.

Company.	Pole line.	Arc wires.			Incandescent wires.		
		Streets.	Alleys.	Services.	Streets.	Alleys.	Services.
United States Electric Lighting Co.	<i>Feet.</i> 51,232	114,241	1,525	10,072	193,583	28,040	69,263
Potomac Electric Power Co. (west of Rock Creek)	63,306	-----	-----	-----	-----	-----	-----
Potomac Electric Power Co. (Eckington)	10,540	-----	-----	-----	-----	-----	-----
Total	125,078	114,241	1,525	10,072	193,583	28,040	69,263

Company.	Alternating wires.			Railway wires.	Wires on bridges.		Dead wires.
	Streets and roads.	Alleys.	Services.		Aque-duct Bridge.	Chain Bridge.	
United States Electric Lighting Co.	3,200	6,665	1,790	-----	-----	-----	57,054
Potomac Electric Power Co. (west of Rock Creek)	154,122	-----	4,753	34,320	8,598	16,340	67,940
Potomac Electric Power Co. (Eckington)	37,240	-----	1,880	-----	-----	-----	16,480
Total	223,362	6,665	8,423	34,320	8,598	16,340	141,474

a Dead.

Length of overhead electric light and power wires removed during fiscal year 1897.

Company.	Pole line.	Arc wires.			Incandescent wires.		
		Streets.	Alleys.	Services.	Streets.	Alleys.	Services.
United States Electric Lighting Co.	<i>Feet.</i> 3,200	5,279	-----	1,348	18,432	156	6,925
Potomac Electric Power Co.	3,605	-----	-----	-----	-----	-----	-----
Total	6,805	5,279	-----	1,348	18,432	156	6,925

Company.	Alternating wires.			Railway wires.	Wires on bridges.		Dead wires.
	Streets and roads.	Alleys.	Services.		Aque-duct Bridge.	Chain Bridge.	
United States Electric Lighting Co.	-----	-----	-----	-----	-----	-----	-----
Potomac Electric Power Co.	32,812	-----	1,495	7,210	-----	-----	1,416
Total	32,812	-----	1,495	7,210	-----	-----	1,416

Summary of overhead electric wires.

Company.	Pole line.				Arc light wires inside city limits.		Incandescent wires inside city limits.		Alternating wires inside city limits.	
	Inside city limits.		Outside city limits.							
	Feet.	Miles	Feet.	Miles	Feet.	Miles.	Feet.	Miles.	Feet.	Miles
United States Electric Lighting Co.	51,232	9.70	-----	-----	125,838	23.83	290,886	55.09	11,655	2.21
Potomac Electric Power Co.	1,361	.25	72,485	13.72	-----	-----	-----	-----	2,722	.51
Total	52,593	9.95	72,485	13.72	125,838	23.83	290,886	55.09	14,377	2.72

Company.	Alternating wires outside city limits.		Railway wires outside city limits.		Bridge wires.				Dead wires.	
	Feet.	Miles.	Feet.	Miles	Live, Aqueduct Bridge.		Dead, Chain Bridge.			
					Feet.	Miles	Feet.	Miles	Feet.	Miles	Feet.	Miles
United States Electric Lighting Co.									a57,054	10.80
Potomac Electric Power Co.	195,273	36.98	34,320	6.5	8,598	1.63	16,340	3.09	b84,420	15.98
Total	195,273	36.98	34,320	6.5	8,598	1.63	16,340	3.09	141,474	26.78

a Inside city limits.

b Outside city limits.

ARC LIGHTING.

Two arc-light systems for street lighting are employed in the District. The United States Electric Lighting Company use Thomson-Houston double-carbon series lamps, supplying current from both Thomson-Houston 50-arc and Brush 125-arc machines. The system adopted by the Potomac Electric Power Company is radically different. They use Adams-Bagnall focusing arc lamps, designed for railway circuits, placing 8 lamps in a series, with adjustable resistance across 500-volt feeders. Current is supplied from two large 10-pole direct connected railway generators, General Electric type, which also furnish current for several trolley roads in the suburbs.

The two kinds of lamps compare very favorably in illuminating power, the Adams-Bagnall lamps feeding more evenly and flickering less than the others. They require large, soft carbons, some of which are cored, during the long hours of burning in winter, as they are single-carbon lamps. The disadvantage in using soft carbons is that the globes become coated inside with a white dust which is hard to remove.

An advantage that this system has over the series system is in the matter of outages. A short circuit or burn-out in the cable of the latter system will frequently extinguish a whole circuit of from 40 to 50 lamps, while with the railway lamps such an accident in any distributing cable will cut out not more than 8. If the trouble should occur in the large feeding cable, only those lamps on the side away from the power house are affected.

The following table gives a comparison of the two systems with respect to the outage reported:

Table showing outages of arc lamps.

Month.	Number of lamps maintained.		Number reported out.		Maximum out in any one night.	
	Potomac Electric Power Co.	United States Electric Lighting Co.	Potomac Electric Power Co.	United States Electric Lighting Co.	Potomac Electric Power Co.	United States Electric Lighting Co.
February, 1897	95	336	18	60	10	28
March, 1897	145	363	54	348	14	63
April, 1897	145	363	18	93	9	23
May, 1897	145	363	26	226	10	47
June, 1897	145	363	13	194	5	35
July, 1897	131	496	20	158	8	66
August, 1897	131	446	25	376	10	84

The laws relating to the subject of electric lighting in the District of Columbia, and which also have a bearing on the construction of conduits and overhead wires and poles, are given below. Other data relating thereto will be found in the printed report of the hearings before the Senate Committee on the District of Columbia. (Senate Doc. No. 92, Fifty-fourth Congress, second session.)

LEGISLATION ON THE SUBJECT OF ELECTRIC LIGHTING.

Appropriation act for year ending June 30, 1883.—For street lamps: For illuminating material, and lighting, repairing and cleaning, and extinguishing lamps on streets and alleys, one hundred and six thousand two hundred and fifty dollars; and hereafter all railroad companies using engines propelled by steam shall provide for the lighting of the streets, avenues, alleys, and grounds through which their tracks may be laid, under the direction and control of the Commissioners; purchase and erection of new lamps and posts, five hundred dollars; one superintendent, nine hundred dollars; repairs to pumps, three thousand dollars; cleaning tidal sewers, three thousand dollars: *Provided*, That no more than twenty-five dollars per annum for each street lamp shall be paid for gas, lighting, extinguishing, repairing, and cleaning, under any expenditure provided for in this act; and in case a contract can not be made at that rate, the Commissioners of the District of Columbia are hereby authorized to substitute other illuminating material, and to use so much of the sum hereby appropriated as may be necessary for that purpose: *Provided further*, That the Commissioners of the District of Columbia shall not be authorized to make any contract for gas or other illuminating material, in accordance with the provisions of this paragraph, for any longer period than one year.

Appropriation act for year ending June 30, 1884.—For street lamps: For illuminating material and lighting, extinguishing, repairing, and cleaning lamps on avenues, streets, and alleys, and for purchasing and erecting new lamp-posts, and to replace such as are old, damaged, and unfit for use, ninety-five thousand three hundred and eighty dollars; and hereafter all railroad companies using engines propelled by steam shall pay to the District for the lighting of the streets, avenues, alleys, and grounds through which their tracks may be laid, under the direction and control of the Commissioners; and in case of default of payment of such bills, actions at law may be maintained by the District of Columbia against said railroad companies therefor: *Provided*, That no more than twenty-two dollars per annum for each street lamp shall be paid for gas, lighting, extinguishing, repairing, and cleaning, under any expenditure provided for in this act. And in case a contract can not be made at that rate, the Commissioners of the District of Columbia are hereby authorized to substitute other illuminating material for the same or less price, and to use so much of the sum hereby appropriated as may be necessary for that purpose: *Provided further*, That the Commissioners of the District of Columbia shall not be authorized to make any contract for gas or other illuminating material, in accordance with the provisions of this paragraph, for any longer period than one year.

Appropriation act for year ending June 30, 1885.—For street lamps: For illuminating material and lighting, extinguishing, repairing, and cleaning lamps, on avenues, streets, and alleys, and for purchasing and erecting new lamp-posts, and to replace such as are old, damaged, and unfit for use, ninety-five thousand three hundred and eighty dollars: *Provided*, That no more than twenty-two dollars per annum for each street lamp shall be paid for gas, lighting, extinguishing, repairing, and cleaning, under any expenditure provided for in this act; and said lamps shall not burn less than two thousand six hundred hours per annum; and the Commissioners of the District of Columbia are authorized to substitute other illuminating material for the same or less price, and to use so much of the sum hereby appropriated as may be necessary for that purpose: *Provided further*, That the Commissioners of the District of Columbia shall not be authorized to make any contract for gas or other illuminating material, in accordance with the provisions of this paragraph, for any longer period than one year.

Appropriation act for year ending June 30, 1886.—Exactly similar to paragraph for preceding year, except that \$100,000 is appropriated.

Appropriation act for year ending June 30, 1887.—For street lamps: For illuminating material and lighting, extinguishing, repairing, and cleaning lamps on avenues, streets, and alleys, and for purchasing and erecting new lamp-posts, and to replace such as are old, damaged, and unfit for use, one hundred thousand dollars: *Provided*, That no more than twenty dollars per annum per lamp for each street lamp shall be paid for gas, lighting, extinguishing, repairing, and cleaning under any expenditure provided for in this act; and said lamps shall not burn less than two thousand six hundred hours per annum; and the Commissioners are

authorized, in their discretion, to substitute other illuminating material at the same or less price, and to use so much of the sum hereby appropriated as may be necessary for that purpose; but not exceeding ten thousand dollars of the above amount may be used in providing electric lights on one or more of the principal thoroughfares of the city, without regard to this limitation: *Provided further*, That the Commissioners of the District of Columbia shall not be authorized to make any contract for gas or other illuminating material, in accordance with the provisions of this paragraph, for any longer period than one year.

Appropriation act for year ending June 30, 1888.—Exactly similar to paragraph for preceding year, except that it appropriated a total of \$120,000, and contains the following clause regarding electric lighting in lieu of that for the preceding year: * * * "but not exceeding twenty thousand dollars of the above amount may be used in providing electric lights on one or more of the principal thoroughfares of the city, without regard to this limitation, but at the lowest reasonable price obtainable." * * *

Appropriation act for year ending June 30, 1889, makes separate appropriation for electric lighting, as follows:

"For electric lighting, including necessary expenses of inspection, on one or more of the principal streets of the cities of Washington and Georgetown, thirty thousand dollars: *Provided*, That no more than fifty cents shall be paid for each light per night burning from sunset to sunrise, and each light shall be of not less than one thousand actual candlepower."

And under the head of "Telegraph and telephone service" the following:

"The Commissioners of the District of Columbia shall not, after the fifteenth day of September, eighteen hundred and eighty-eight, permit or authorize any additional telegraph, telephone, electric lighting or other wires to be erected or maintained on or over any of the streets or avenues of the city of Washington, and the said Commissioners are hereby directed to investigate and report to Congress at the beginning of its next session the best method of interring the same under ground, and such legal regulation thereof as may be needed; and they shall report what manner of conduits should be maintained by the city of Washington, if any, and the cost of constructing and maintaining the same, and what charge, if any, should be made by the city for the use of its conduits by the persons or corporations placing wires therein, and upon what terms and conditions the same should be used when required so to do, and for such investigation one thousand dollars is hereby appropriated: *Provided*, That the Commissioners of the District of Columbia may, under such reasonable conditions as they may prescribe, authorize the wires of any existing telegraph, telephone, or electric light company now operating in the District of Columbia to be laid under any street, alley, highway, footway, or sidewalk in the District whenever, in their judgment, the public interest may require the exercise of such authority; such privileges as may be granted hereunder to be revocable at the will of Congress without compensation, and no such authority to be exercised after the termination of the present Congress."

This Congress, the Fiftieth, expired March 3, 1889.

Appropriation act for year ending June 30, 1890.—For electric lighting, including necessary inspection on one or more of the principal streets of the cities of Washington and Georgetown, including the south side of Pennsylvania avenue, forty thousand dollars: *Provided*, That no more than sixty cents per night shall be paid for any light burning from sunset to sunrise and operated wholly or in part by overhead wires; and each arc light shall be of not less than one thousand actual candlepower, and no part of this appropriation shall be used for electric lighting after September thirtieth, eighteen hundred and eighty-nine, by means of wires that may exist on or over any of the streets or avenues of the cities of Washington and Georgetown: *Provided further*, That the Commissioners of the District of Columbia shall investigate, ascertain, and report to the first session of the Fifty-first Congress what deduction may be made for gas and electric lighting, both for annual and for five-year contracts; and that they be authorized to invite proposals for supplying said light at reduced rates, and in this they are not limited to any one system.

Same act, under head of "Telegraph and telephone service," provided as follows:

"That the Commissioners of the District of Columbia may hereafter, under such reasonable conditions as they may prescribe, authorize the overhead wires of any telegraph, telephone, or electric light company to be laid under any street, alley, highway, footway, or sidewalk in the District, whenever in their judgment the public interest may require the exercise of such authority, such privileges as may be granted hereunder to be revocable at the will of Congress without compensation, and this authority to continue only until the termination of the Fifty-first Congress."

The Fifty-first Congress expired March 3, 1891.

Appropriation act for year ending June 30, 1891.—For electric lighting, including necessary expenses of inspection, on one or more of the principal streets of the cities of Washington and Georgetown, including the south side of Pennsylvania avenue, and two arc lights for Freedmen's Hospital and Asylum, forty-six thousand dollars: *Provided*, That no more than sixty cents per night shall be paid for any lights burning from sunset to sunrise, and no more than forty cents per night shall be paid for any light burning from sunset to sunrise and operated wholly or in part by overhead wires; and each arc light shall be of not less than one thousand actual candlepower, and no part of this appropriation shall be used for electric lighting after September thirtieth, eighteen hundred and ninety, by means of wires that may exist on or over any of the streets or avenues of the cities of Washington and Georgetown: *Provided further*, That the Commissioners of the District of Columbia shall investigate, ascertain, and report to the second session of the Fifty-first Congress what deductions may be made for gas and electric lighting, both for annual, five-year, and ten-year contracts, and that they be authorized to invite proposals for supplying said light at reduced rates, and in this they are not limited to any one system.

The same act, under head of "Telegraph and telephone service," provided as follows:

"The President of the United States is hereby authorized to appoint a board consisting of three persons, one of whom shall be an army engineer, skilled in electric matters, one a civil engineer of known skill and experience in municipal engineering, and one an expert electrician of high repute: *Provided*, That not more than one member shall be a resident of the District of Columbia; and no member shall be in the employ of any electric company, or shall have any interest in the business or securities of such company, or be interested in any patent or any form of conduit or subway, or device pertaining thereto. Said board shall consider the location, arrangement, and operation of electric wires in the District of Columbia, whether used, or to be used, for electric lighting, transmission of power, telegraphy, telephony, or signalling, with a view to securing, as soon as practicable, the construction of a safe and convenient system of conduits and subways, the placing therein of all necessary electric wires along the streets, avenues, and other public spaces, and the removal of all unused overhead wires, and their supports. To this end, the board will, as soon as practicable, and not later than December first, eighteen hundred and ninety-one, report to the President, who shall submit the same to the first session of the Fifty-second Congress, as follows:

"First. Recommendations for a complete system of conduits or subways, with all suitable branches, connections, and appurtenances for the safe and efficient operation therein of the necessary cables and conductors. Such recommendations shall be accompanied by maps, detailed drawings, and estimates of cost.

"Second. Opinion as to whether the conduits or subways should be built, owned, and operated by private corporations or individuals, subject to public control, or constructed and maintained by public authority and leased to companies or individuals. If the latter, recommendation will be made as to the terms and conditions upon which such leases should be executed.

"Third. Also recommendations concerning the construction, location, operation, and maintenance of underground cables and conductors, carrying currents of different intensities, with a view to promote the public safety, and to secure the most convenient and efficient use of such cables and conductors, and the appliances connected therewith.

"Fourth. Recommendations as to the restrictions, if any, which should be imposed by law upon the character and intensity of electric currents conveyed by conductors situated over or under the public streets, avenues, and spaces, and used for electric lighting, transmission of power, telegraphy, telephony, or signalling.

"Fifth. Recommendations respecting the regulation of, the arrangement and use of authorized overhead wires.

"To meet the expenses of the said board, there is hereby appropriated the sum of ten thousand dollars, or so much thereof as may be necessary: *Provided*, That the officer detailed from the Corps of Engineers shall not receive any salary except that due to his rank."

The sundry civil appropriation act for year ending June 30, 1891, provided as follows:

"For introducing electric lamps and wires into the Executive Mansion and connecting the same by underground cable with the source of electricity, seven thousand seven hundred dollars; and the sum appropriated for the purchase of gas may be applied to the purchase of gas or electric light.

"For electric lights for three hundred and sixty-five nights, from seven posts, at forty cents per light per night, one thousand and twenty-two dollars."

Appropriation act for year ending June 30, 1892.—For electric lighting, including necessary expenses of inspection, on one or more of the principal streets of the cities of Washington and Georgetown, maintaining existing service and necessary extensions, fifty-nine thousand five hundred dollars: *Provided*, That no more than fifty cents per night shall be paid for any electric arc light burning every night from sunset to sunrise, and operated wholly by means of underground wires, and each arc light shall be of not less than one thousand actual candlepower, and no part of this appropriation shall be used for electric lighting by means of wires that may exist on or over any of the streets or avenues of Washington and Georgetown: *Provided*, That the Commissioners of the District of Columbia are hereby authorized, in their discretion, to enter into contract for electric arc lights, which shall fulfill the conditions above specified for a period of three years from July 1st, 1891, at a price not to exceed fifty cents per lamp per night.

Same act, under head of "Telegraph and telephone service," provides as follows: " * * * *Provided*, That the board appointed under the provisions of the District of Columbia appropriation act, approved August sixth, eighteen hundred and ninety, to consider and report upon a system of conduits and subways and kindred matters, shall in addition submit a set of recommendations concerning a safe and efficient wiring of public and private buildings for all electric purposes: *Provided further*, That until action by Congress upon the report of the board appointed to consider the location, arrangement, and operation of electric wires in the District of Columbia, pursuant to the act approved August sixth, eighteen hundred and ninety, or until April first, eighteen hundred and ninety-two, whichever shall first occur, the Commissioners of the said District shall not permit the additional construction of more than five miles of conduits or subways in aggregate length for electric lighting purposes, nor more than five miles of conduits or subways in aggregate length for telephone service; this to apply to all permits heretofore granted or hereafter granted under existing law, all such permits to be revocable by Congress as heretofore provided, but not to apply to necessary street or house connections for electric service nor to changes of motive power on street railways, in compliance with existing law."

The sundry civil appropriation act for year ending June 30, 1892, provided as follows:

"For electric lights for three hundred and sixty-six nights, from seven posts, at forty cents per light per night, one thousand and twenty-four dollars and eighty cents."

Appropriation act for year ending June 30, 1893.—For electric lighting, including necessary expenses of inspection, on one or more of the principal streets, in the cities of Washington and Georgetown, maintaining existing service and necessary extensions, fifty-nine thousand five hundred dollars: *Provided*, That not more than fifty cents per night shall be paid for any electric arc light burning every night from sunset to sunrise, and operated wholly by means of underground wires; and each arc light shall be of not less than one thousand actual candlepower, and no part of this appropriation shall be used for electric lighting by means of wires that may exist on or over any of the streets or avenues of the cities of Washington and Georgetown.

Sundry civil appropriation act for year ending June 30, 1893, provides:

"For electric lights for three hundred and sixty-five nights, from seven posts, at forty cents per light per night, one thousand and twenty-two dollars."

[PUBLIC RESOLUTION—No. 13.]

A Joint Resolution providing for additional telegraphic and electric-light facilities in the city of Washington during the inaugural ceremonies on the fourth day of March, eighteen hundred and ninety-three.

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the Commissioners of the District of Columbia be, and they are hereby, authorized to permit the Western Union Telegraph Company and the United States Electric Company to extend overhead wires into the Pension building and to such points along the line of parade as shall be deemed by the chief marshal convenient for use in connection with the parade and other inaugural purposes, the said wires to be taken down within ten days after the conclusion of the ceremonies on the fourth day of March, eighteen hundred and ninety-three.

Approved, February 15, 1893.

Appropriation act for year ending June 30, 1894.—For electric lighting, including necessary expenses of inspection, on one or more of the principal streets in the cities of Washington and Georgetown, maintaining existing service and necessary

extensions, fifty-nine thousand five hundred dollars: *Provided*, That not more than fifty cents per night shall be paid for any electric arc light burning every night from sunset to sunrise, and operated wholly by means of underground wires; and each arc light shall be of not less than one thousand actual candlepower; and no part of this appropriation shall be used for electric lighting by means of wires that may exist on or over any of the streets or avenues of the cities of Washington and Georgetown: *Provided further*, That the Commissioners of the District of Columbia shall investigate, ascertain, and report to the first session of the Fifty-third Congress what deduction may be made for gas and electric lighting both for annual, five-year, and for ten-year contracts, and that they be authorized to invite proposals for supplying said light at reduced rates; and in this they are not limited to any one system or company.

The provision in the sundry civil appropriation act for the year ending June 30, 1894, for electric lighting in the Executive Mansion and public grounds was exactly similar to that of the preceding year.

Appropriation act for year ending June 30, 1895.—For electric lighting, including necessary expenses of inspection, on one or more of the principal streets in the cities of Washington and Georgetown, maintaining existing service, and necessary extensions, forty-seven thousand six hundred dollars: *Provided*, That not more than forty cents per night shall be paid for any electric arc light burning every night from sunset to sunrise, and operated wholly by means of underground wires; and each arc light shall be of not less than one thousand actual candlepower, and no part of this appropriation shall be used for electric lighting by means of wires that may exist on or over any of the streets or avenues of the cities of Washington and Georgetown.

The sundry civil appropriation act for year ending June 30, 1895, provided:

“For electric lights, for three hundred and sixty-five nights, from seven posts, at thirty cents per light per night, seven hundred and sixty-six dollars and fifty cents.”

Appropriation act for year ending June 30, 1896.—For electric lighting, including necessary expenses of inspection, on one or more of the principal streets in the cities of Washington and Georgetown, maintaining existing service and necessary extensions, forty-seven thousand six hundred dollars: *Provided*, That not more than forty cents per night shall be paid for any electric arc light burning every night from sunset to sunrise, and operated wholly by means of underground wires, and each arc light shall be of not less than one thousand actual candlepower, and no part of this appropriation shall be used for electric lighting by means of wires that may exist on or over any of the streets or avenues of the cities of Washington and Georgetown.

The sundry civil appropriation act for year ending June 30, 1896, provides:

“For electric lights, for three hundred and sixty-five nights, from seven posts, at thirty cents per light per night, seven hundred and sixty-six dollars and fifty cents.”

Appropriation act for year ending June 30, 1897.—For electric arc lighting, including necessary inspection, in those streets now lighted with electric arc lights, in the city of Washington, and for necessary extensions of such service, fifty thousand dollars: *Provided*, That not more than thirty cents per night shall be paid for any electric arc light burning from forty-five minutes after sunset to forty-five minutes before sunrise, and operated wholly by means of underground wires; and each arc light shall be of not less than one thousand actual candlepower, and no part of this appropriation shall be used for electric lighting by means of wires that may exist on or over any of the streets or avenues of the city of Washington: *Provided*, That the Commissioners of the District of Columbia may, under such reasonable restrictions as they may prescribe, authorize any existing electric light company, having overhead wires, to maintain and use for a period of eight months, and no longer, its existing poles and overhead wires west of Rock Creek, in places outside of the existing fire limits of the city of Washington, and of the District of Columbia, and any such overhead wire system may be extended west of Rock Creek, and outside of said fire limits, to continue only for said period of eight months, and at the end of said period all right or authority hereby conferred shall cease.

And the said Commissioners may also authorize any such existing electric light company to construct and use, under such regulations as the Commissioners may fix, conduits for the reception of existing overhead wires within the territory formerly known as Georgetown, and to extend the same by an aggregate of not more than one and one-fourth miles of conduit in the same territory. And the United States Electric Lighting Company may extend its underground conduits and wires east of Rock Creek, and within the said fire limits to Mount Pleasant,

and Washington, and Columbia Heights, under such regulations as the Commissioners of the District of Columbia may prescribe.

The sundry civil appropriation act for the year ending June 30, 1897, provides:

"For electric lights, for three hundred and sixty-five nights, from seven posts, at twenty cents per light per night, on grounds south of Executive Mansion, five hundred and eleven dollars.

"For electric lights, for three hundred and sixty-five nights, for not exceeding thirty-two posts, in Lafayette, Franklin, Judiciary, and Lincoln parks, at twenty-eight cents per light per night, three thousand two hundred and seventy dollars and forty cents: *Provided*, That all wires shall be placed underground and that the conduits, wires, lampposts complete shall be furnished by the electric light company without expense to the United States, and that twenty-eight cents per lamp per night shall cover the entire cost to the United States of lighting and maintaining, in good order, each electric light in the parks mentioned."

The general deficiency act for year ending June 30, 1896, provides as follows:

"STREETS: For electric lighting, namely: For amount required to light Eckington and West Eckington, being for the service of the fiscal year eighteen hundred and ninety-six, five hundred dollars."

Appropriation act for the year ending June 30, 1898.—For electric lighting, including necessary inspection, in those streets now lighted with electric arc lights in the city of Washington, fifty-five thousand dollars: *Provided*, That not more than twenty-five cents per night shall be paid for any electric arc lamp burning from forty-five minutes after sunset to forty-five minutes before sunrise, and operated wholly by means of underground wires; and each arc light shall be of not less than one thousand actual candlepower, and no part of this appropriation shall be used for electric lighting by means of wires that may exist on or over any of the streets or avenues of the city of Washington. Until Congress shall provide for a conduit system it shall be unlawful to lay conduits or erect overhead wires for electric lighting purposes in any road, street, avenue, highway, park, or reservation except as hereafter specially authorized by law: *Provided, however*, That the Commissioners of the District of Columbia are hereby authorized to issue permits for house connections, with conduits and overhead wires now existing adjacent to the premises with which such connection is to be made, and also permits for public-lighting connections with conduits already in the portion of the street proposed to be lighted. And nothing herein contained shall be construed to affect in any way any pending legislation involving the validity or invalidity or legality of the construction of any conduits made since June eighteenth, eighteen hundred and ninety-six, nor to prevent the United States Electric Lighting Company from extending conduits into Columbia Heights, Washington Heights, and Mount Pleasant, within the fire limits, as specifically provided in the act of June eleventh, eighteen hundred and ninety-six, making appropriations for the expenses of the government of the District of Columbia; and the existing overhead wires of the Potomac Electric Power Company west of Rock Creek and outside of the fire limits are hereby authorized to be maintained for a period of one year from the passage of this act and no longer.

Extension of fire-alarm telegraph.—For extension of the fire-alarm telegraph, including new boxes, purchase and erection of the necessary poles with cross arms, insulators, pins, and braces, wire for extension of lines, and extra labor for stringing the wire, seven thousand five hundred dollars: *Provided*, That wherever there are telegraph or telephone poles, or telephone conduits, available for the use of the said fire alarm telegraph, the Commissioners of the District of Columbia are hereby authorized to make arrangements for the use of such poles or conduits without expense to the said District; and the authority granted to the said Commissioners in the District of Columbia appropriation act, approved August seventh, eighteen hundred and ninety-four, to authorize the erection and use of telephone poles in the alleys of the city of Washington shall be limited as follows: Hereafter no wire shall be strung on any alley pole at a height of less than fifty feet from the ground at the point of attachment to said pole; temporary permits may be granted by said Commissioners to string wires from cable poles, or from existing overhead trunk lines, to poles in, or to be erected in, alleys, and from alley poles in one square to alley poles, or house-top fixtures, in another square for the purpose of making necessary house connections from all cable poles and existing overhead trunk lines within the District of Columbia; such house connection to be made from the cable poles or overhead trunk lines nearest the subscriber. Nothing herein contained shall be deemed to authorize the erection of any additional pole or poles upon any street, avenue, or public reservation within the said city; and such privileges as may be granted hereunder to be revokable at the will of Congress without compensation.

Sundry civil appropriation act for the year ending June 30, 1898.—For gas, pay of lamplighters, gas fitters, and laborers; purchase, erection, and repair of lamps and lamp-posts; purchase of matches, and repairs of all kinds; fuel and lights for office, office stable, watchmen's lodges, and for the greenhouses at the nursery, thirteen thousand dollars: *Provided*, That for each five-foot burner not connected with a meter in the lamps on the public grounds no more than twenty dollars shall be paid per lamp for gas, including lighting, cleaning, and keeping the lamps in repair, under any expenditure provided for in this act; and said lamps shall burn every night on the average from forty-five minutes after sunset to forty-five minutes before sunrise; and authority is hereby given to substitute other illuminating material for the same or less price, and to use so much of the sum hereby appropriated as may be necessary for that purpose: *Provided*, That before any expenditures are made from the appropriations herein provided for, the contracting gas company shall equip each lamp with a self-regulating burner and tip, so combined and adjusted as to secure, under all ordinary variations of pressure and density, a consumption of five cubic feet of gas per hour.

Electric lights: For electric lights for three hundred and sixty-five nights from seven posts, at twenty cents per light per night, on grounds south of the Executive Mansion, five hundred and eleven dollars.

For lighting thirty-two are electric lights in Lafayette, Franklin, Judiciary, and Lincoln parks three hundred and sixty-five nights, at twenty-five cents per light per night, which shall cover the entire cost to the United States of lighting and maintaining in good order each electric light in said parks, two thousand nine hundred and twenty dollars. Until Congress shall provide for a conduit system it shall be unlawful to lay conduits or erect overhead wires for electric lighting purposes in any road, street, avenue, highway, park, or reservation, except as hereafter specifically authorized by law: *Provided, however*, That the Commissioners of the District of Columbia are hereby authorized to issue permits for house connections with conduits and overhead wires now existing adjacent to the premises with which such connection is to be made; and also permits for public lighting connections with conduits already in the portion of the street proposed to be lighted. And nothing herein contained shall be construed to affect in any way any pending litigation involving the validity or invalidity or legality of the construction of any conduits made since June eighteenth, eighteen hundred and ninety-six, nor to prevent the United States Electric Lighting Company from extending conduits into Columbia Heights, Washington Heights, and Mount Pleasant within the fire limits as specifically provided in the act of June eleventh, eighteen hundred and ninety-six, making appropriations for the expenses of the government of the District of Columbia; and the existing overhead wires of the Potomac Electric Power Company west of Rock Creek and outside the fire limits are hereby authorized to be maintained for a period of one year from the passage of this act and no longer.

Very respectfully submitted.

WALTER C. ALLEN,
Inspector of Electric Lighting.

Capt. W. M. BLACK,
Engineer Commissioner District of Columbia.
(Through Capt. Edward Burr.)

REPORT OF THE INSPECTOR OF GAS AND METERS.

GAS SUPPLY.

The illuminating power and purity of the gas supplied in the District of Columbia during the year ending June 23, 1897, has been inspected and tested in accordance with the third section of an act relating to the sale of gas in the District of Columbia, approved June 6, 1896.

The above-mentioned section provides that from and after the 30th day of June, 1896, the illuminating power of the gas in the District of Columbia shall be equal to 25 candles on the Bunsen photometer, using the Bray slit union burner, No. 7, consuming 5 cubic feet of gas per hour, and such gas shall not contain more than 20 grains of sulphur in any form in 100 cubic feet, nor more than 5 grains of ammonia in any form in 100 cubic feet, and shall be free of the impurity known as sulphureted hydrogen.

Nine hundred and eight photometric tests were made of the illuminating power of the gas furnished by the Washington Gas Light Company during the past year at the three laboratories designated by law.

The average illuminating power of the gas, determined at the Central Laboratory, corner Tenth and D streets NW., was found to equal 25.43 candles; the highest illuminating power, 28.76 candles; the lowest illuminating power, 23.02 candles.

The average illuminating power of the gas, determined at the Southeast Laboratory, corner Fifth and D streets SE., was found to equal 25.97 candles; the highest illuminating power, 29.78 candles; the lowest illuminating power, 23.76 candles.

The average illuminating power of the gas, determined at the Northwest Laboratory, 1335 Fourteenth street NW., was found to equal 26.14 candles; the highest illuminating power, 30.30 candles; the lowest illuminating power, 22.46 candles.

Recapitulation.—Mean average illuminating power for the year, 25.84 candles; maximum average illuminating power for the year, 29.61 candles; minimum average illuminating power for the year, 23.08 candles.

Defaults.—On seven occasions during the year the illuminating power of the gas supplied by the Washington Gaslight Company at the three laboratories, by average, was found not to equal 25 candles.

Ammonia and sulphur.—The average quantity of ammonia found in 100 cubic feet of gas at the Central and Southeast laboratories (no test having been made at the Northwest Laboratory for ammonia and sulphur) was 0.89 grains; the highest quantity of ammonia found in 100 cubic feet of gas was 5.38 grains; the lowest quantity of ammonia found in 100 cubic feet of gas was 0.05 grains. On one occasion at the Central Laboratory the quantity of ammonia found slightly exceeded the 5 grains allowed, namely, 0.38 grains.

The average quantity of sulphur found in 100 cubic feet of gas at the Central and Southeast laboratories was 3.94 grains; the highest quantity of sulphur in 100 cubic feet of gas was 10.62 grains; the lowest quantity of sulphur in 100 cubic feet of gas was 1.16 grains. No default in the sulphur standard occurred during the year.

Sulphureted hydrogen.—The presence of sulphureted hydrogen was found on 27 occasions at the Central Laboratory, on 96 occasions at the Northwest Laboratory, and on 32 occasions at the Southeast Laboratory. As stated above, the greatest number of defaults occasioned by the presence of sulphureted hydrogen occurred at the Northwest Laboratory. The season of the year when this impurity was most prevalent was during the months of October, November, December, and January.

After a thorough investigation of this subject, and every expedient having been resorted to to overcome and dissipate this nuisance, but without fully accomplishing the object sought, the conclusion was reached that the cause of the continued presence of sulphureted hydrogen was found to be owing to inadequate means of purification of the water gas at the time of year when the largest make of gas was required of the Northwest works.

The Washington Gaslight Company, appreciating this fact, are having new four-box purifiers put in their water-gas plant, Twenty-sixth and G streets. When this improvement has been completed, the annoying sulphur compound (sulphureted hydrogen), it is confidently expected, will be entirely eliminated from the gas supplied to consumers.

The gas supplied by the Washington Gaslight Company is a mixture of coal and water gases in varying proportions. When the gas is wholly carbureted water gas, or mostly so, the light furnished is white and intense, but the flame is smaller than when the mixture contains from a third to a half of coal gas. The light under the latter conditions is not so white or intense, but the flame is larger and more diffusive, rendering the light more acceptable to consumers for the ordinary purposes of illumination.

Specific gravity.—The specific gravity of the gas furnished by the Washington Gaslight Company was as follows:

Central laboratory:	
Average gravity.....	.607
Highest gravity.....	.630
Lowest gravity.....	.574
Southeast laboratory:	
Average gravity.....	.589
Highest gravity.....	.630
Lowest gravity.....	.540
Northwest laboratory:	
Average gravity.....	.594
Highest gravity.....	.601
Lowest gravity.....	.580

¹Air 1,000.

Gas pressure.—The pressure of the gas furnished by the Washington Gaslight Company was as follows:

	Inches.
Central laboratory:	
Average pressure.....	1.57
Highest pressure.....	2.40
Lowest pressure.....	1.08
Southeast laboratory:	
Average pressure.....	2.12
Highest pressure.....	2.87
Lowest pressure.....	1.62
Northwest laboratory:	
Average pressure.....	1.71
Highest pressure.....	2.60
Lowest pressure.....	1.11

The above pressures were recorded between the hours of sunset and sunrise.

Three hundred and three photometric tests were made of the illuminating power of the gas furnished by the Georgetown Gaslight Company at the laboratory, 1338 Thirty-second street NW. The average illuminating power of the gas was found to equal 27.19 candles; the highest illuminating power, 32.05 candles; the lowest illuminating power, 22.76 candles.

Defaults.—On ten occasions the illuminating power of the gas supplied by this company was found to be less than 25 candles.

Ammonia and sulphur.—The average quantity of ammonia found during the year in 100 cubic feet of gas was 3.32 grains; the highest quantity of ammonia found was 9.86 grains; the lowest quantity of ammonia found was 0.68 grains.

Defaults.—On seven occasions the quantity of ammonia found in 100 cubic feet of gas was in excess of the 5 grains allowed. The average quantity of sulphur found during the year in 100 cubic feet of gas was 11.62 grains; the highest quantity of sulphur found was 17.65 grains; the lowest quantity of sulphur found was 7 grains. No defaults occurred in the sulphur standard.

Sulphuretted hydrogen.—On nine occasions during the month of February the gas of this company contained sulphuretted hydrogen. The presence of this impurity was caused by the company having to allow the gas to go on the town without being purified, owing to an accident to their plant. This is the only instance in many years that sulphuretted hydrogen was found in the gas supplied by the Georgetown Gaslight Company, and in this particular instance the cause was unavoidable.

The gas supplied by the Georgetown Gaslight Company is made from coal, enriched with oil. It is of fine quality, yielding by average during the past year 27.19 candles with a consumption of 5 cubic feet per hour. It would be advisable that consumers of gas in Georgetown use burners with finer openings than were formerly required, so as to guard against smoke, caused by imperfect combustion, which is due to the burners in use at the present time not being suitable for completely consuming the rich gas required to be furnished by this company by the act of June 6, 1896.

*Specific gravity.*¹—The specific gravity of the gas furnished by the Georgetown Gaslight Company was as follows:

Thirty-second Street laboratory:	
Average gravity.....	.500
Highest gravity.....	.594
Lowest gravity.....	.450

Gas pressure.—The pressure of the gas furnished by the Georgetown Gaslight Company was as follows:

	Inches.
Thirty-second street laboratory:	
Average pressure.....	1.90
Highest pressure.....	4.05
Lowest pressure.....	.20

The above pressures were recorded between the hours of sunset and sunrise.

INSPECTION OF METERS.

Three thousand six hundred and thirty-six gas meters were inspected and proved by this office from June 24, 1896, to June 23, 1897. With the exception of 11 meters inspected and proved for the Alexandria gas works the above number

¹ Air, 1,000.

was inspected and proved for the Washington and Georgetown gaslight companies and for consumers of gas in Washington and Georgetown. The results of inspection were as follows: One hundred and thirty-five registered fast, average error 4.54 per cent; 635 registered slow, average error 10.76 per cent; 2,595 registered within the limits allowed by law, namely, 2 per cent either way, and were sealed and returned to the gaslight companies for service; 260 did not register the gas flowing through them; 1,197 of the above-described meters were ordered out of service and inspected and proved on complaint; 280 were inspected and proved on complaint of consumers, they believing them to be incorrect; 109 registered fast, average error 4.56 per cent; 23 registered slow, average error 5.25 per cent; 148 registered within the limits allowed, namely, 2 per cent either way; 917 meters were inspected and proved on complaint of the gas companies; 24 registered fast, average error 5.10 per cent; 612 registered slow, average error 27.55 per cent; 21 registered within the limits allowed; 260 did not register the gas flowing through them. Nine hundred and two of the above-described meters were tested on complaint of the Washington Gaslight Company. The reason so many were found registering slow and not registering at all is owing to the fact that meters of this class are removed from service by this company, believing them to be inaccurate. They are then tested in the company's shop to ascertain their condition before applying for an inspection by this office.

Under the conditions named it is not likely that the inspector would often find meters of this description registering fast or within the limits allowed.

FEEES COLLECTED FOR METER INSPECTIONS.

The sum of \$1,245.30 was collected for meters inspected and proved by this office from June 24, 1896, to June 23, 1897. The same was paid to the collector of the District of Columbia, to be placed to the credit of the United States and District of Columbia in equal parts.

I again renew the recommendation made in the annual report of this office for the past three years that an additional assistant inspector be provided to assist in the inspection of meters when necessary and perform other work in the laboratories under the direction of the inspector.

The recommendation made for some years past that the salary of the messenger be increased from \$480 to \$600 per annum is again renewed. This employee has laboratory work to perform which requires care and attention aside from his regular duties as messenger, and the compensation at present allowed is inadequate for the services rendered.

S. CALVERT FORD,
Inspector of Gas and Meters.

Report of the illuminating power and purity of the gas supplied by the Washington Gaslight Company from June 24, 1896, to June 23, 1897.

CENTRAL LABORATORY.

Month.	Number of observations.	Illuminating power in sperm candles.			Quantity of ammonia in 100 cubic feet.			Quantity of sulphur in 100 cubic feet.			Number of occasions that sulphureted hydrogen was present during the year.
		Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.	
					Grains.	Grains.	Grains.	Grains.	Grains.	Grains.	
July.....	25	25.07	27.26	23.24	2.36	3.08	1.47	4.30	5.35	2.24	1
August.....	26	25.70	27.70	23.71	1.05	2.60	1.02	3.64	5.03	2.12	5
September.....	26	25.40	28.76	24.53	.96	1.78	.17	3.58	4.99	2.06	7
October.....	26	25.70	28.50	24.21	.50	.85	.11	4.13	5.49	2.31	1
November.....	26	25.93	28.36	24.63	.44	.79	.05	2.81	3.68	1.78	2
December.....	25	25.27	27.13	23.38	.35	.96	.17	4.21	5.51	3.11	-----
January.....	25	25.62	27.29	24.33	.69	1.30	.17	4.37	5.90	2.81	2
February.....	25	25.44	27.33	23.92	2.16	5.38	.45	5.68	9.09	3.41	4
March.....	23	25.52	27.32	23.89	.56	1.13	.22	6.82	7.94	4.80	1
April.....	27	25.32	27.70	24.17	.41	.56	.17	5.76	8.19	3.54	-----
May.....	25	24.70	26.45	23.02	.62	.79	.34	7.29	10.62	5.33	-----
June.....	26	25.19	27.23	24.15	.58	.90	.39	6.42	9.43	3.70	4
Total.....	305	305.16	-----	-----	11.28	-----	-----	59.01	-----	-----	27

Report of the illuminating power and purity of the gas supplied by the Washington Gaslight Company, etc.—Continued.

AVERAGE FOR THE YEAR.

Illuminating power in sperm candles:		
Mean		25.43
Highest		28.76
Lowest		23.02
Quantity of ammonia in 100 cubic feet:		
Mean	grains..	.94
Highest	do.....	5.38
Lowest	do.....	.05
Quantity of sulphur in 100 cubic feet:		
Mean	grains..	4.91
Highest	do.....	10.62
Lowest	do.....	1.78
Sulphureted hydrogen, number of times present during the year		27

On seven occasions the illuminating power of the gas supplied by this company at the three laboratories by average was less than 25 candles.

On one occasion the quantity of ammonia found at this laboratory was slightly in excess of the 5 grains allowed.

On 27 occasions sulphureted hydrogen was present at this laboratory.

Report of the illuminating power and purity of the gas supplied by the Washington Gaslight Company from June 24, 1896, to June 23, 1897.

NORTHWEST LABORATORY.

Month.	Number of observations.	Illuminating power in sperm candles.			Number of occasions that sulphureted hydrogen was present during the year.
		Mean.	Highest.	Lowest.	
July	25	26.98	30.59	24.97	3
August	26	26.05	28.50	22.46	-----
September	25	26.20	28.00	24.53	1
October	26	26.16	28.08	24.26	15
November	26	25.85	27.62	24.44	21
December	25	26.01	28.89	24.20	23
January	23	24.99	26.18	23.57	23
February	25	25.71	26.99	23.12	9
March	23	25.75	27.52	24.20	-----
April	27	26.68	28.93	24.82	-----
May	25	26.91	29.30	24.51	-----
June	26	26.42	28.93	24.06	-----
Total	302	313.71	-----	-----	96

AVERAGE FOR THE YEAR.

Illuminating power in sperm candles:		
Mean		26.14
Highest		30.30
Lowest		22.46
Sulphureted hydrogen, number of times present during the year		96

On 7 occasions the illuminating power of the gas supplied by this company at the three laboratories by average was found less than 25 candles.

On 96 occasions sulphureted hydrogen was found at this laboratory during the year.

Report of the illuminating power and purity of the gas supplied by the Washington Gaslight Company from June 24, 1896, to June 23, 1897.

SOUTHEAST LABORATORY.

Month.	Number of observations.	Illuminating power in sperm candles.			Quantity of ammonia in 100 cubic feet.			Quantity of sulphur in 100 cubic feet.			Number of occasions that sulphureted hydrogen was present during the year.
		Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.	
					<i>Grains.</i>	<i>Grains.</i>	<i>Grains.</i>	<i>Grains.</i>	<i>Grains.</i>	<i>Grains.</i>	<i>Grains.</i>
July.....	35	26.81	29.78	25.23	0.69	1.36	0.17	1.82	2.61	1.37	.....
August.....	36	26.16	28.39	24.12	1.09	2.55	.51	1.61	2.47	1.30	.....
September.....	36	25.92	27.58	24.43	.72	1.02	.34	2.03	3.43	1.30	.....
October.....	26	25.96	27.28	24.44	1.00	1.53	.85	2.01	2.95	1.37	.....
November.....	36	25.79	27.41	23.76	1.03	1.70	.17	1.88	2.74	1.37	.....
December.....	33	25.98	27.39	24.25	.84	1.96	.51	2.32	3.43	1.23	.....
January.....	33	26.36	27.83	24.22	1.00	1.19	.85	2.61	3.70	1.37	.....
February.....	34	26.24	29.76	23.98	.83	1.19	.34	3.68	4.80	2.33	.....
March.....	34	25.52	26.66	24.40	.40	.85	.17	4.25	6.45	3.29	.....
April.....	35	25.92	28.91	24.08	.71	1.02	.17	3.92	6.59	2.06	.....
May.....	35	25.60	27.18	24.53	1.14	1.53	.68	4.59	6.87	1.16	.....
June.....	36	25.57	28.27	24.32	.75	1.19	.34	5.08	6.87	1.51	.....
Total.....	391	311.73	-----	-----	10.20	-----	-----	35.80	-----	-----	32

AVERAGE FOR THE YEAR.

Illuminating power in sperm candles:		
Mean		25.97
Highest		29.78
Lowest		23.76
Quantity of ammonia in 100 cubic feet:		
Mean	grains..	.85
Highest	do....	2.55
Lowest	do....	.17
Quantity of sulphur in 100 cubic feet:		
Mean	grains..	2.98
Highest	do....	6.87
Lowest	do....	1.16
Sulphureted hydrogen, number of times present during the year		32

On 7 occasions the illuminating power of the gas supplied by this company at the three laboratories by average was found less than 25 candles.

On 32 occasions sulphureted hydrogen was found during the year at this laboratory.

246 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

Report of the illuminating power and purity of the gas supplied by the Georgetown Gas Light Company from June 24, 1896, to June 23, 1897.

LABORATORY BES THIRTY-SECOND STREET NW.

Month.	Number of observations.	Illuminating power in sperm candles.			Quantity of ammonia in 100 cubic feet.			Quantity of sulphur in 100 cubic feet.			Number of occasions that sulphuretted hydrogen was present during the year.
		Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.	Mean.	Highest.	Lowest.	
					<i>Grains.</i>	<i>Grains.</i>	<i>Grains.</i>	<i>Grains.</i>	<i>Grains.</i>	<i>Grains.</i>	
July.....	25	27.41	31.13	25.07	3.33	4.02	2.57	10.68	14.65	8.87	
August.....	26	27.39	30.95	25.15	4.05	6.04	1.88	11.91	14.92	9.31	
September.....	26	27.64	31.73	24.99	3.55	4.25	2.72	12.47	14.16	8.51	
October.....	26	27.46	29.24	25.08	2.40	3.23	1.70	10.15	11.40	8.88	
November.....	25	27.04	31.19	25.63	4.58	9.86	2.55	13.32	17.31	10.64	
December.....	26	26.64	31.54	23.06	1.89	4.25	1.68	11.69	14.01	9.89	
January.....	23	27.93	31.82	23.76	4.04	7.09	1.87	12.62	17.65	11.12	
February.....	25	26.59	29.44	23.45	2.93	3.57	2.21	13.25	17.37	9.48	9
March.....	23	26.02	30.14	23.84	2.98	6.12	2.21	9.50	11.12	7	
April.....	25	27.28	32.05	25.23	3.67	4.25	2.89	9.77	12.15	8.10	
May.....	26	26.93	30.62	23.53	3.17	4.08	2.38	11.67	15.98	7.35	
June.....	26	27.08	30.87	25.07	3.30	4.45	2.43	12.42	13.52	10.56	
Total.....	303	26.31			39.89			139.54			

AVERAGE FOR THE YEAR.

Illuminating power in sperm candles:	
Mean.....	27.19
Highest.....	32.05
Lowest.....	23.76
Quantity of ammonia in 100 cubic feet:	
Mean.....	grains. 3.32
Highest.....	do. 9.86
Lowest.....	do. .68
Quantity of sulphur in 100 cubic feet:	
Mean.....	do. 11.62
Highest.....	do. 17.65
Lowest.....	do. 7.00
Sulphuretted hydrogen, number of times present during the year.....	9

On 10 occasions the illuminating power of the gas supplied by this company was less than 25 candles.

On 7 occasions the quantity of ammonia found exceeded the 5 grains allowed.

On 9 occasions during the month of February sulphuretted hydrogen was present.

Report showing the pressure of the gas supplied by the Washington Gas Light Company, as registered in this office, central laboratory, corner Tenth and D streets, from July 1, 1896, to June 30, 1897.

Month.	Mean.	Maximum.	Minimum.
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>
July.....	1.47	1.82	1.21
August.....	1.52	1.95	1.08
September.....	1.62	1.92	1.25
October.....	1.62	1.92	1.29
November.....	1.59	1.90	1.24
December.....	1.63	2.02	1.20
January.....	1.69	1.90	1.26
February.....	1.59	1.95	1.25
March.....	1.64	2.40	1.25
April.....	1.54	1.93	1.29
May.....	1.53	1.91	1.29
June.....	1.56	1.93	1.24
Total.....	18.91		
Average mean pressure.....		inches. 1.57	
Maximum pressure (March 3, 1897).....		do. 2.40	
Minimum pressure (August 8, 1896).....		do. 1.08	

Report showing the pressure of the gas supplied by the Washington Gas Light Company, as registered in this office, southeast laboratory, corner Fifth and D streets, from July 1, 1896, to June 30, 1897.

Month.	Mean.	Maximum.	Minimum.
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>
July.....	1.99	2.46	1.65
August.....	1.96	2.33	1.65
September.....	2.07	2.55	1.62
October.....	2.22	2.58	1.78
November.....	2.22	2.87	1.81
December.....	2.26	2.91	1.75
January.....	2.21	2.77	1.73
February.....	2.22	2.69	1.70
March.....	2.22	2.79	1.62
April.....	2.14	2.80	1.63
May.....	2.04	2.66	1.66
June.....	1.93	2.30	1.64
Total.....	25.48		

Average mean pressureinches.. 2.12
 Maximum pressure (November 30, 1896).....do.... 2.87
 Minimum pressure (September 13, 1896, March 24, 1897).....do.... 1.62

Report showing the pressure of the gas supplied by the Washington Gaslight Company, as registered in this office, northwest laboratory, 1335 Fourteenth street, from July 1, 1896, to June 30, 1897.

Month.	Mean.	Maximum.	Minimum.
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>
July.....	1.74	2.12	1.40
August.....	1.70	2.02	1.35
September.....	1.63	1.95	1.11
October.....	1.60	1.92	1.30
November.....	1.60	1.95	1.27
December.....	1.69	2.21	1.31
January.....	1.70	2.18	1.30
February.....	1.75	2.35	1.39
March.....	1.80	2.60	1.43
April.....	1.78	2.15	1.46
May.....	1.78	2.20	1.35
June.....	1.78	2.17	1.47
Total.....	20.55		

Average mean pressureinches.. 1.71
 Maximum pressure (March 4, 1897).....do.... 2.60
 Minimum pressure (September 28, 1896).....do.... 1.11

Report showing the pressure of the gas supplied by the Georgetown Gaslight Company, as registered in this office, 1338 Thirty-second street laboratory, from July 1, 1896, to June 30, 1897.

Month.	Mean.	Maximum.	Minimum.
	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>
July.....	1.88	3.00	1.43
August.....	1.79	2.90	1.30
September.....	1.83	2.92	1.40
October.....	1.71	2.18	1.17
November.....	1.75	2.31	1.25
December.....	1.88	2.57	1.31
January.....	1.94	3.81	.30
February.....	1.96	2.55	.30
March.....	2.03	2.62	1.52
April.....	1.95	2.62	1.46
May.....	1.98	4.05	1.15
June.....	2.11	3.67	1.34
Total.....	22.81		

Average mean pressureinches.. 1.90
 Maximum pressure (May 18, 1897).....do.. 4.05
 Minimum pressure (February 26, 1897).....do.. .30

Report of meters inspected and proved for the Georgetown Gaslight Company and for consumers of gas in Georgetown, from June 24, 1896, to June 23, 1897.

Month.	Meters tested.	New meters for company.		Repaired meters for company.		Consumers' meters on complaint of consumers.								Consumers' meters on complaint of company.				Consumers' meters on complaint of company that did not register.
		Total.	Correct.	Total.	Correct.	Total.	Fast.		Slow.		Correct.	Total.	Fast.		Correct.			
July.....	20	1	1	14	14	5	No. 1	P. ct. 5.33			4							
August.....	1																	
September.....	28	24	24			3	2	3.24			1	1	1	3.83				
October.....	4											4	4	4.47				
November.....	3																	
December.....	18			13	13	3	1	3.66			2							
January.....	28	18	18			4	3	5.38			1	1	1	7.66				
February.....	30	12	12	10	10	5	4	5.99	1	5	5							
March.....	15					5	4	4.95			1							
April.....	20					2	1	4			1	6	2	5	3	1		
May.....	2											2	1	3.50				
June.....	20			17	17	3	1	3.33			2							
	159	55	55	54	54	35	17	a4.48	1	5	17	15	9	*4.89	5	1		

a Average.

One hundred and fifty-nine meters were inspected and proved during the year ending June 23, 1897, for the Georgetown Gaslight Company and for consumers of gas in Georgetown. Of this number 26 registered fast, average error 4.68 per cent; 1 registered slow, 5 per cent; 131 registered within the limits allowed by law, namely 2 per cent either way, and 1 did not register, the gas flowing through it.

Report of meters inspected and proved for the Washington Gaslight Company and for consumers of gas in Washington from June 24, 1896, to June 23, 1897.

Month.	Whole number of meters tested.	New meters for company.		Repaired meters for company.			Consumers' meters on complaint of consumers.						
		To-tal.	Cor-rect.	Total.	Fast.		Cor-rect.	To-tal.	Fast.		Slow.		Correct.
					No.	P. ct.			No.	P. ct.	No.	P. ct.	
July.....	286	2	2	188	.....	.....	188	18	5	3.86	5	6.46	8
August.....	252	.....	.....	156	.....	.....	156	4	.....	.....	1	2.83	3
September.....	257	.....	.....	172	.....	.....	172	6	2	6.24	.....	.....	4
October.....	349	100	100	176	.....	.....	176	22	5	3.59	3	3.86	14
November.....	240	.....	.....	171	.....	.....	171	27	9	4.29	4	3.16	14
December.....	263	6	6	177	.....	.....	177	29	9	4.94	4	3.22	16
January.....	387	100	100	136	.....	.....	136	31	18	5.09	1	3	12
February.....	455	206	206	135	.....	.....	135	35	10	4.49	1	3.66	15
March.....	260	50	50	111	.....	.....	111	18	7	5.16	1	3.33	10
April.....	272	.....	.....	162	.....	.....	162	37	17	4.87	1	4.16	19
May.....	216	.....	.....	147	1	3.16	146	9	4	4.41	.....	.....	5
June.....	199	.....	.....	124	1	3.50	123	18	6	4.10	1	21.50	11
Total.....	3,466	464	464	1,855	2	a 3.33	1,853	245	92	a 4.64	22	a 5.51	131

Month.	Consumers' meters on complaint of company.						Con- sumers' meters on com- plaint of company that did not reg- ister.
	Total.	Fast.		Slow.		Cor- rect.	
July.....	78	No. 1	P. ct. 4.33	No. 50	P. ct. 26.25	1	26
August.....	92			69	27.20	1	22
September.....	79			55	28.70	2	22
October.....	51			35	27.97	1	15
November.....	42	1	4.66	21	31.74	3	17
December.....	81	4	4.20	48	30.56	2	27
January.....	120	1	3.50	84	21.99	-----	35
February.....	88	2	6.89	56	27.89	-----	30
March.....	81	5	7.83	55	27.48	-----	21
April.....	73			49	24.57	-----	24
May.....	60	1	5.83	43	26.52	4	12
June.....	57			47	29.80	2	8
Total.....	902	15	a 5.32	612	a 27.55	16	259

a Average.

During the year ending June 23, 1897, 3,466 meters were inspected and proved for the Washington Gaslight Company and for consumers of gas in Washington. Of this number, 109 registered fast, average error 4.40 per cent; 634 registered slow, average error 16.53 per cent; 2,464 registered within the limits allowed by law—namely, 2 per cent either way; and 259 did not register the gas flowing through them.

Eleven meters were inspected for the Alexandria Gas Works.

REPORT OF THE INSPECTOR OF BUILDINGS.

OFFICE OF THE INSPECTOR OF BUILDINGS,
Washington, D. C., August 26, 1897.

SIR: I have the honor to submit herewith the annual report covering the transactions of the building department for the fiscal year ending June 30, 1897, together with estimates and recommendations for the fiscal year ending June 30, 1899.

Statement of permits issued from June 30, 1896, to July 1, 1897.

Description.	Number.	Value.
Brick dwellings.....	616	\$2,248,310.00
Frame dwellings.....	116	161,310.00
Brick repairs and alterations.....	526	620,247.00
Frame repairs and alterations.....	395	59,817.00
Stores (brick).....	19	184,250.00
Stores (frame).....	4	1,450.00
Stables (brick).....	22	15,900.00
Stables (frame).....	12	3,785.00
Warehouses (brick).....	5	18,200.00
Churches.....	6	122,000.00
Office buildings.....	4	96,500.00
Workshops, etc.....	5	7,800.00
Flats and apartment houses.....	6	242,000.00
Schools and colleges (private).....	2	205,000.00
Greenhouse.....	1	525.00
Grand stand.....	1	2,400.00
Market.....	1	10,000.00
Gymnasium.....	1	5,500.00
Sheds.....	277	14,028.00
Total buildings, repairs, etc.....	2,019	4,019,022.00
Vaults or underground construction.....	12	6,450.75
Minor repairs.....	1,499	12,491.00
Reviewing stands (not including stands on reservations).....	71	17,750.00
Awnings (post frames).....	103	8,755.00
Boilers, elevators, and fire escapes.....	148	38,130.00
Total for all structures.....	3,852	4,102,598.75

Special applications for projections beyond the building line—	
Approved.....	354
Disapproved.....	1

Comparative statement of building operations for the years 1896 and 1897.

New buildings:		Dwellings:	
1896.....	1,337	1896.....	1,006
1897.....	1,098	1897.....	732
Decrease.....	239	Decrease.....	274

Valuation of building operations:	
1896.....	\$4,793,991.99
1897.....	4,102,598.75
Decrease.....	691,393.24

Number of permits issued:	
1896.....	1,964
1897.....	1,622
Decrease.....	342

The following summary will show the distribution of improvements in the different sections of the District and the value of same:

County buildings.....	\$1,477,935	Northwest repairs.....	\$518,818
Northwest buildings.....	1,108,015	County repairs.....	53,819
Northeast buildings.....	357,600	Southwest repairs.....	50,232
Southeast buildings.....	319,280	Northeast repairs.....	36,656
Southwest buildings.....	62,100	Southeast repairs.....	34,567
Total.....	3,324,930	Total.....	694,092

Receipts of the office for the year:

For building permits	\$2, 874. 00
For vaults or underground construction	1, 657. 92
For water for building purposes	936. 85
For awning	103. 00
For boilers, engines, and ovens	9. 00
Total	5, 580. 77
Received for year 1896	6, 871. 08
Received for year 1897	5, 580. 77
Decrease	1, 290. 31

In addition to the permits above enumerated, miscellaneous permits were issued, for which no fees were obtained, consisting of renewals of parking railings, laying pavements within parking spaces, rebuilding entrance porches and steps, temporary structures for the use of builders in connection with new construction, extra occupancy of public space for building materials, and excavations for buildings.

The corps of assistant inspectors have been faithful and painstaking in the discharge of the duties assigned them, and I append a statement of the execution of the miscellaneous character of their assignments:

SIR: We, the undersigned assistant inspectors, respectfully submit the following statement of the amount and character of the work done in connection with the building operations of the District during the fiscal year ending June 30, 1897:

Number of inspections of new buildings in city and county	2, 806
Number of inspections of old frame buildings and sheds examined for repair	413
Number of inspections of old buildings reported as dangerous	211
Number of inspections of old brick buildings examined for repair	272
Number of inspections and notices sent to make good defective construction	194
Number of inspections and notices for condemnation of party walls	19
Number of inspections and notices sent for condemnation of brick buildings	59
Number of inspections and notices sent for condemnation of frame buildings	129
Number of inspections and notices sent for condemnation of defective chimneys	30
Notices sent for removal of obstructions from alleys, streets, and parkings	75
Notices sent to vacate dangerous buildings	27
New numbers given to old buildings	115
Violation of the building regulations	38
Notices sent to connect down spouts with sewers	48
Notice given to repair gutters and down spouts to protect adjoining property	27
Examinations of requests to remove houses, fences, sheds, and horses from fuel sheds, etc	138
Miscellaneous inspections not enumerated above	273
Total	4, 874

A careful examination of the foregoing statement will show the greatly varied character of the duties we are called on to perform, the amount of clerical work entailed in the number of notices sent, written reports of examinations, notices sent to renumber houses, and in addition to this the keeping of the record and field books, eleven in number. The time occupied on this work, with the time taken up in the examination of trivial complaints requiring immediate attention, the complaints about party fences, dilapidated sheds, the examination of old buildings for repair, making repairs without permits, the conversion of fuel sheds to stables, repairs to gutters and down spouts, leaves but little time for the proper examination of the new buildings being erected throughout the District, and the constantly increasing extent of territory to be covered (by three men) caused by the erection of new buildings beyond the city limits, shows, we think, the absolute necessity for an increase of force, both of office and field work, in order that we may be able to devote more time and give a more careful inspection to the supervision and construction of the new buildings being erected in the 60.22 square miles of territory coming under our supervision.

In addition to the foregoing, constant examinations of stands for inaugural and other purposes were made during the two weeks prior to the 4th of last March. Each of the assistant building inspectors devoted his entire time, regardless of the weather, to a careful inspection of those temporary structures. As a result of this care, it affords pleasure to add that no accident of any kind resulted to the many thousands of people assembled on that important occasion.

Thanking you very kindly for your uniform kindness and support on all occasions, we have the honor to remain, very respectfully yours,

C. W. SOMMERVILLE,
RICHARD M. EVANS,
JAMES L. PARKINSON,

Assistant Inspectors of Buildings.

The increase in the physical equipment of this department, suggested above, is a reiteration of the argument I used in my last annual report. The volume of work of a miscellaneous character increases each year, and to dispose of it promptly will require an additional force.

I recommend that four more assistant inspectors be provided, each at a salary of \$1,200 per annum, and that the salaries of the present inspectors be increased to \$1,200 per annum; also, that an additional clerk at \$1,200 per annum be provided.

If this increase be granted, the administration of this office will be more effectual, and the community will appreciate the prompt service this department would render with such a changed condition.

DISTRICT BUILDINGS.

The plans and specifications were prepared in this office for the several municipal buildings provided for in the appropriation bill, and in the erection of which the expenditures made are shown by the following detailed accounts:

CONGRESS HEIGHTS, GIESBORO.

Original appropriation, 1896		\$9,000.00
Drafting and drawing materials	\$158.20	
Specifications	28.06	
Contingent expenses	25.00	
Contract	7,800.00	
Work outside of contract	740.98	
Blackboarding	28.00	
		8,780.24
Balance		219.76

SCHOOL BUILDING, LANGDON.

Appropriation		\$8,000.00
Drafting and drawing materials for brick and frame building	\$153.00	
Specifications (for brick and frame building)	25.73	
Contract	6,542.00	
Superintendence	390.00	
Extra work	223.50	
Blackboarding and outhouses	464.13	
Grading	165.75	
		7,964.11
Balance		35.89

CONDUIT ROAD SCHOOL.

Appropriation		\$8,000.00
Site	\$2,000.00	
Drafting	54.00	
Specifications	10.03	
Car tickets for superintendent	5.00	
Blackboarding	31.50	
Contract, \$5,843; less \$12 for cement furnished	5,831.00	
Cost of cement furnished by the District	10.65	
		7,942.18
Balance		57.82

CENTRAL HEATING STATION.

Appropriation		\$4,000.00
Drafting	\$64.00	
Specifications	11.21	
		75.21
Balance		3,924.79

The bids for this building exceeded the appropriation, and an additional appropriation of \$4,500 was made for 1898, and the work is now in progress.

GARFIELD HOSPITAL.

Appropriation		\$7,500.00
Specifications	\$14.94	
Plumbing	35.06	
Contract	7,450.00	
		7,500.00

Repairs to school buildings and improvements to grounds, 1896 and 1897.

Appropriation		\$32,000.00
Deficiency appropriation		4,543.24
Total		36,543.24
First division	\$705.64	
Second division	2,658.62	
Third division	3,445.47	
Fourth division	520.11	
Fifth division	1,499.61	
Sixth division	1,590.36	
Seventh division	485.39	
Eighth division	2,198.95	
Colored high	327.57	
Pay rolls, and materials delivered at shop	18,849.08	
		32,280.80
Balance		4,262.44

REMODELING THE WALLACH SCHOOL AND BUILDING ADDITION TO SAME.

A contract was made for this work for the sum of \$19,779. After the old portion of the building had been remodeled and occupied for school purposes, and the new addition had reached the first floor of joists, the contractor abandoned the work. His bondsmen took possession of the building and carried it as far as roofing in the building, when they too abandoned the work. The Commissioners then ordered the inspector of buildings to complete the building.

The sum appropriated for this work was found to be inadequate to complete the building, and a further sum of \$2,000 was secured.

The expenditures were as follows:

Appropriation		\$22,000.00
Preparing plans		187.73
Superintendence		500.00
Paid to contractor Winfree \$11,484.82, less \$279.78 retained to pay for material furnished by District of Columbia		11,205.04
Paid to Esher and Kengla, bondsmen, including cost of one month's superintendence		3,604.00
Paid by inspector of buildings to continue work as follows:		
Tin roofing		329.00
Galvanized-iron work		40.00
Plastering		346.00
Area, stair walls, and arches		690.85
Granolithic pavement in basement		180.00
Brick paving in basement		160.00
Lumber		399.16

Paid by inspector of buildings to continue work as follows—Continued.

Carpenter work.....	\$350.00
Iron stairways.....	620.00
Slate treads.....	206.85
Steel ceilings.....	510.00
Stone steps in areas.....	64.46
Glazing.....	100.00
Painting.....	190.00
Extra carpenter work.....	140.30
Hardware.....	99.78
Plumbing.....	700.00
Plumbing, extra.....	67.01
Glass, extra.....	2.60
Railings.....	155.00
Stone copings.....	143.00
Millwork.....	800.00
Millwork.....	33.94

Amount expended..... 21,824.72

The above shows the amount expended of the original appropriation of \$22,000, which left the building still uncompleted. The additional appropriation of \$2,000 is now being applied to the completion of the steam heating and other work of a miscellaneous character which is incorporated in the specifications for this building.

STEVENS SCHOOL.

A contract was entered into to reconstruct the Stevens School for the sum of \$26,250, but by reason of the slow progress of the work and the many claims filed against the contractor the Commissioners were obliged to suspend him and order the inspector of buildings to complete the work. As the work contracted for left off the finishing of four rooms, a second appropriation of \$6,000 was secured, making the total appropriation \$35,000.

Expenditures were as follows:

Original appropriation.....	\$29,000.00
Preparing plans.....	\$140.00
Drawing materials.....	18.70
Specifications.....	38.88
Superintendence.....	636.00
Paid to Contractor Cabell to date of suspension.....	13,792.85
Paid by inspector of buildings as follows:	
Plastering.....	1,000.00
Extra plasterers.....	42.00
Plumbing.....	272.00
Extra plumbing.....	90.49
Millwork.....	2,124.67
Painting.....	460.00
Tinning.....	459.00
Galvanized-iron work.....	627.70
Slating.....	337.75
Pay rolls for labor.....	1,669.12
Brickwork and materials.....	129.38
Lumber.....	877.49
Hardware.....	125.69
Steam heating.....	1,690.00
Ironwork.....	1,250.00

25,781.72

Balance..... 3,218.28

NOTE.—The extra work performed by the contractor before suspension, namely, the rebuilding of old brick walls adjoining staircases, amounts to \$804.80, which increases contract price to \$27,054.80.

The expenditures made for the appropriation of \$6,000, were as follows:

Appropriation		\$6,000.00
Payrolls	\$939.54	
Plates and beams	57.00	
Lumber	409.47	
Plumbing	86.98	
Painting, glazing, and blackboarding	162.00	
Plastering	350.75	
Superintendence	172.00	
Radiators	546.62	
Brick	10.50	
Millwork	580.00	
Hardware	58.24	
Fire-clay	1.50	
Tar paper	8.62	
Slatting	9.00	
Felt and weights	31.28	
Lime and cement	5.70	
Sand	3.15	
Glass	6.10	
Cleaning windows, soap, etc .....	.50	
		<u>3,438.95</u>
Balance		2,561.05

Legislation has been obtained to use the unexpended balances to satisfy as far as possible the claims filed with the auditor of the District of Columbia for material and labor furnished to the contractor on this building.

REPAIRS TO STATION HOUSES, 1896, 1897.

Appropriation	\$2,000.00	
Deficiency appropriation	21.80	
		<u>2,021.80</u>
No. 1	\$108.96	
No. 2	148.44	
No. 3	284.52	
No. 4	134.30	
No. 5	82.56	
No. 6	415.11	
No. 7	112.08	
No. 8	79.37	
No. 9	63.11	
Substation, Anacostia	25.85	
Detective department	14.00	
Pay rolls	511.86	
Material delivered at shop	17.61	
		<u>1,997.77</u>
Balance		24.03

SPECIAL REPAIRS TO MARKET HOUSES, 1896, 1897.

Appropriation	\$1,500.00	
Deficiency appropriation	199.00	
		<u>1,699.00</u>
Western	\$546.45	
Eastern	629.25	
Eastern and Western	105.00	
		<u>1,280.70</u>
Balance		418.30

256 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

REPAIRS TO ENGINE HOUSES, 1896, 1897.

Appropriation	\$3,500.00
Deficiency appropriation	219.96
	<hr/>
	3,719.96
No. 1	\$314.91
No. 2	21.43
No. 4	21.62
No. 5	452.46
No. 6	241.94
No. 7	250.78
No. 8	114.37
No. 9	46.40
No. 10	101.07
No. 11	169.58
Truck A	85.37
Truck B	3.31
Truck C	152.18
Truck D	148.51
Pay rolls	1,326.72
Material delivered at shop	50.82
	<hr/>
	3,501.47

Balance 218.49

REPAIRS TO MARKET HOUSES, CONTINGENT EXPENSES.

Appropriation	\$600.00
Eastern and Western	\$54.30
Georgetown, Western, and Eastern	51.00
Georgetown and Western	11.24
Georgetown	255.53
Western	111.81
Eastern	18.74
	<hr/>
	502.62

Balance 97.38

Balance of appropriation, \$4,921.81, transferred from truck house D to complete new No. 2 engine house and remodel old No. 2 engine house, was expended as follows:

NEW NO. 2.

Electrical work	\$404.50
Plans	20.00
Pay rolls for labor	376.50
Driveway	318.56
Plastering	151.00
Plumbing	114.50
Mill work	129.00
Lumber	110.81
Hardware	8.29
Galvanized iron	10.00
Material for floor in tower	44.54
Sliding poles	74.00
Gas fixtures	52.86
Cleaning up	6.00
	<hr/>
Total	1,820.56

REMODELING OLD NO. 2.

Plans	\$12.00
Pay rolls for labor	1,190.98
Lumber	329.44
Ironwork	42.80
Concrete	54.00
Plumbing	305.64
Electrical work	165.00
Plastering	38.00
Millwork	8.01

REMODELING OLD NO. 2—continued.

Metal ceilings	\$135.00
Hardware	8.54
Whitewashing and cleaning	7.21
Material for stack	16.70
Paints and oils	40.00
Gas fixtures	29.90

Total	2,383.22
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HOUSE, LOT, AND FURNITURE, VICINITY OF BRIGHTWOOD, TO ACCOMMODATE
CHEMICAL ENGINE COMPANY NO. 2.

Appropriation	\$15,900.00
Site	\$2,023.34
Contract	8,995.00
Draftsman	126.00
Tracer	33.00
Specifications	14.79
Superintendence	404.00
Drawing material	10.66
Extra work	407.50
Material and labor covering stalls	19.87
Driveway	\$89.42
Mechanical and electrical appliances	404.50
Gas fixtures	36.25
Sliding pole	41.95
Extra hatrack	1.35
Connecting sewer	48.00
	13,455.63
Balance	2,444.37

NO. 12 ENGINE HOUSE, 1896, 1897.

Appropriation	\$23,000.00
Cost of site	\$5,000.00
Paid on contract	\$10,693.00
Superintendence charged to contract	204.00
65 pounds cement charged to contract	52.00
	10,949.00
Tracing	45.00
Draftsman	162.00
Drafting material	19.36
Specifications	17.39
Superintendence	464.00
Extra work	116.00
Coping around parking line and sodding	135.15
Iron fence	57.00
Gas fittings	48.48
Sliding pole	42.50
Covering stalls, material and labor	29.70
Iron steps in rear	20.00
Whitewashing fence	2.00
Asphalt driveway	447.34
Electrical appliances	404.50
Extra spring	18.00
Extending gas pipe	11.70
Connecting sewer, etc	47.25
Material, shelving	11.00
Lumber for area steps	4.35
Granolithic pavement leading to vaults	21.00
Rebuilding doors, entrance, and painting, etc	65.00
	18,137.72
Less profits on cement furnished by District	5.85
	18,131.87
Balance	4,868.13

258 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

REPAIRS TO POLICE COURT BUILDING, 1897.

Appropriation.....		\$700.00
Cleaning sewer.....	\$4.50	
Repairing heating apparatus.....	22.97	
Pay roll.....	53.62	
Painting.....	112.50	
Material.....	60.19	
Plumbing.....	112.55	
Chimney cap.....	19.50	
Repairing fire rake.....	.75	
New lock and keys.....	5.00	
Fixing flag pole.....	1.50	
Building sewer and manhole.....	9.00	
Lowering gas fixtures.....	1.50	
Putting in new cast-iron sewer.....	268.70	
		672.28
Balance.....		27.72

To complete and equip the smallpox hospital with boiler house, heating apparatus, etc.:

Appropriation.....		\$6,000.00
Contract for steam heating.....	\$2,783.00	
Preparing plans.....	20.00	
Range fixtures.....	250.00	
Sinking boiler pit and building retaining wall.....	80.00	
Building, material and labor, smokestack.....	114.79	
Sewer.....	140.00	
Gas fixtures.....	56.00	
Easing doors.....	18.00	
Specifications.....	8.97	
	3,470.76	
Less on contract for cesspool omitted.....	6.00	
		3,464.76
Balance.....		2,535.24

In my former reports I have recommended that the Potomac School building should be replaced by a modern eight-room building, because it is old, unsightly, has no conveniences, is not properly heated and ventilated, and is unfit for the purpose to which it is devoted.

The condition of the Hillsdale and Lovejoy School buildings are parallel to the Potomac, and appropriations should be secured to replace them with modern eight-room buildings.

At the request of the board of school trustees, and concurred in by the inspector of buildings, the control of the repairs to school buildings was transferred to the chairman of the committee on buildings and grounds (Mr. George H. Harries) by the honorable Commissioners. I have no recommendation to make other than to suggest that a sum not less than \$5,000 should be obtained to neutralize the annual wear and tear upon 116 buildings.

ENGINE HOUSES.

The engine and truck houses number 17, and to keep them in a habitable condition, to neutralize wear and tear, which necessarily, by reason of the nature of their occupancy, is excessive, the sum heretofore appropriated, namely, \$3,500, has been found by experience inadequate, and I recommend that it be increased to \$5,000.

I have been compelled by lack of funds to eliminate decay in structural features in many buildings, and procrastination means additional cost in neutralizing wear and tear, therefore it would be economy to allow the necessary appropriations asked for.

STATION HOUSES.

The District now owns 9 station houses, and attached to each are stables, yet the appropriations for annual repair has been only \$2,000, a sum inadequate to

keep them in a proper condition. Many of them need painting, both on the exterior and interior, the sanitary condition of some should be improved, and to neutralize the wear and tear I recommend that the sum of \$5,000 be asked for.

BUILDING DEPARTMENT.

Estimates.—The following are the estimates for the year ending June 30, 1899, for the expenses of this office, the care of the District office building, and repairs to various buildings under the supervision of this office:

Salary of—

Inspector of buildings	\$2,400
Chief clerk and architect	1,600
Eight assistant inspectors of buildings (four additional, at \$1,200)	9,600
One clerk	900
One clerk, additional	1,200
Messenger	480
Contingent expenses, books, blanks, stationery, livery, and repairs to carriage	675
Total	16,855

CARE OF DISTRICT OFFICE BUILDINGS.

One engineer	\$900
One fireman	480
One janitor	700
Two elevator operators (\$360 each)	720
Six laborers, \$1.50 per day (1,878 days)	2,817
Total	5,617

REPAIRS TO BUILDINGS.

Public-school buildings and grounds	\$50,000
Police stations	5,000
Fire-engine houses	5,000
Market houses	
Police court	800
Interior District office building	1,000
Total	

The current appropriations for the several buildings are not in any respect sufficient to comply with the demands that are made to place them in proper condition. Each year the number of buildings are increased, but the amount estimated for their proper care has not been allowed. The wear and tear that our buildings are subjected to is such as to demand prompt attention to neutralize, and when repairs are delayed for want of money the cost becomes greater. Therefore I hope that estimates submitted will receive your indorsement for favorable consideration.

In the above estimates your attention is called to the fact, that I have incorporated the expenses of the additional force, namely four assistant inspectors and one clerk, heretofore alluded to, as necessary for the proper administration of this department.

STEVENS AND WALLACH SCHOOLS.

During the present year the building department has been subjected to much friction and trouble, in the construction of the two school buildings named above, by reason of the inability of the contractors to prosecute the work, in the manner prescribed in the contracts, by reasons of claims filed against them by material men, subcontractors, and mechanics; that the Commissioners were forced to the necessity of suspending them, and directing the inspector of buildings to complete the work.

To avoid the repetition of such actions in the future, I recommend:

First. That the form of bond be so amended as to impose upon the bondsmen the responsibility of all obligations assumed by the contractor to every person connected with the building, namely, material men, mechanics, and laborers.

Second. As my experience has given me the knowledge that labor and material has been rendered to the District, in the erection of some of the municipal buildings, for which the laborer or mechanic or material men have not been compen-

sated, I recommend that Congress be asked for legislation to authorize the erection of the District buildings by day labor or by contract, at the discretion of the Commissioners.

While buildings under this system would cost more money, yet their construction would be of such a character as to create in every citizen confidence in their security and integrity.

REPORT OF THE INSPECTOR OF ELEVATORS.

SIR: I have the honor to submit the following as a list of the inspections made by me during the fiscal year ending June 30, 1897:

Elevator inspections	629
Elevators inspected and condemned	69
Premises examined to locate steam boilers	35
Premises examined to locate bake ovens	5
Premises examined to locate gas engine	1
Inspections for the United States	11
Miscellaneous inspections	970
Inspections of heating apparatus	120
Premises examined for fire escapes	32
Fire escapes examined during construction and condemned	6
Total	1,869

I call your attention to the necessity for an amendment to the elevator regulations, to read as follows:

To provide safety guards upon passenger elevators, and a penalty for violation thereof. That all elevators that are now in use or that may hereafter be constructed in the District of Columbia for the carriage of passengers are required to have placed thereon or attached thereto such automatic-locking device, electrical or mechanical, as will hold immovable and secure the carriage used in such elevator while any gate, door or doors at the landings that is used for entrance thereto or exit therefrom is or are open and unsecured, the said automatic device, electrical or mechanical, to place the power of controlling the elevator beyond the control of the attendant while any gate, door or doors on the landing leading to the carriage is open or unsecured.

Any person or persons, firm or corporation, who may own any building where passenger elevators are used shall be required within six months from the adoption of the amendment to have said automatic-locking device, electrical or mechanical, placed thereon or attached thereto, and in perfect operation, or be subject to a penalty or fine as prescribed in section 2 of act of Congress approved March 3, 1887.

Very respectfully,

E. F. VERMILLION,
Assistant Inspector of Elevators.

In conclusion, I beg to extend to you the acknowledgments of my obligations for the uniform kindness and courtesy which you have always manifested toward the building department.

Very respectfully,

JOHN B. BRADY,
Inspector of Buildings.

W. M. BLACK,

*Captain, Corps of Engineers, U. S. A.,
Engineer Commissioner District of Columbia.*

REPORT OF THE SURVEYOR OF THE DISTRICT OF COLUMBIA.

WASHINGTON, July 27, 1897.

GENTLEMEN: Pursuant to instructions, I have the honor to transmit herewith a statement of the operations of this office during the year ending June 30, 1897.

The following services were performed for private parties during that period, viz. 577 surveys were made, which involved the making of 577 certificates of surveys furnished the parties ordering them as well as recording the certificates in books prepared for that purpose, which, together with the plats prepared of the

property ordered to be surveyed, aggregate 1,731 plats. One hundred and forty-one subdivisions were recorded, 128 of which were for private parties, the remaining 13 subdivisions were recorded in conformity with order of honorable Commissioners, dated October 7, 1896. The recording as well as the two preliminary plats for action of the Commissioners involved the making of 423 plats.

Fully one-third of the time of the personnel of the office is occupied in answering questions and giving information to the public concerning the original divisions and subdivisions of property, as well as information generally relating to property interests in the District of Columbia.

The following services were rendered per order Commissioners of the District of Columbia:

Surveys.—Square 1061, lots 19 and parts 18 and 20, schoolhouse site; square 624, parts of lots 13, 14, and 15 and all of lots 53, 54, and 84, Government Printing Office; Sherman avenue, east and west lines, from Grant avenue to Irving street; outlines of park, subdivision, "Ingleside;" site of Western High School and topographical map of principal plantations; Pierce street, Anacostia, from Jefferson street to Griswold's subdivision; block 11, lot 1, Bloomingdale; alley in square 387, and located obstructions; alley in square 894, and located obstructions; block 1, parts of lots 31, 32, 33, and 34, White Haven; square 830, lots 17, 22, and parts of lots 16 and 23, schoolhouse site; alley in square 371, and located obstructions; alleys in square 690; Peter's Mill Seat, part of lot 15, engine house site; block 6, part of lot 9, extension of Sixteenth street; alleys in squares 457 and 894, and located obstructions; square 878, south front, frontages of 24 houses, use board of assessors District of Columbia; Harrison street, Anacostia, from Minnesota avenue to Monroe street; property lines on Thirty-seventh street extended; Corcoran, Olivet, and Capitol avenues, Ivy City; alleys, squares 16 and 28, and located houses erected therein, use health officer District of Columbia; reservation No. 9, and located Pension building, Secretary of the Interior; alley in square 1232, and located obstructions; alley 30 feet wide, square 515; Western High School grounds, use inspector of buildings District of Columbia; appropriation No. 13, north 600 feet, request of Attorney-General United States; Mount Pleasant, land owned by National Association for Destitute Colored Women and Children; alleys in squares 953-5 and 361, and located obstructions; appropriation No. 13, resurvey, part owned by United States, request of Attorney-General United States; west line of Connecticut avenue to a point 200 feet south of Chappel road, and located Maj. George A. Arnes's fence and barn; schoolhouse lot on Connecticut avenue extended; square 1059, and located stagnant water; part of Columbia road claimed by heirs of Admiral Quackenbush; square 1061, lot 19, and parts lots 18 and 20, schoolhouse ground; square 265, lot 4, and parts of lots 5 and 19, assessor of the District of Columbia.

Plats recorded.—Condemnation of alley in Bellevue; dedication of part of Widow's Mite, by Lawrence Sands; dedication of parts of blocks 5, 7, 11, 12, 13, 14, 15, 17, and 18 by Rosa Wallach and Jesse Brown, widening of Sherman avenue; dedication of part of lot 9, block 11, Mount Pleasant, by Dennis and Ellen Murphy, widening of Sherman avenue; dedication of part of lot 1, block 11, Mount Pleasant, by Patrick Long, widening of Sherman avenue; extension of High street through lots 102 and 103, Griswold's addition to Anacostia; dedication of land in Chevy Chase for a roadway, extending southerly from the Circle; dedication of east part of lot 9, block 6, Meridian Hill, by W. Pitt Kellogg, widening of Sixteenth street; dedication of land in front of lots 120 and 121, Washington Heights, by Clark L. Goddard, widening of Wyoming avenue; Thirty-seventh street, from Back street to Thirty-second street, by holding and deeds; dedication of land in direct extension of Connecticut avenue, through parts of Kalorama Heights and Woodley Park; extension of Connecticut avenue through parts of Washington Heights and Kalorama Heights; Emporia Street from westerly line of South Brookland to the east line of Twelfth street. Fifty-seven plats of avenues, streets, and alleys were furnished and 210 letters written. Ninety seven reports upon miscellaneous subjects.

In course of improvements on many of the avenues, streets, and alleys throughout the District it became necessary to remove the marks of surveys, which were of great value and importance, but through the courtesy of Capt. Lansing H. Beach, assistant to Engineer Commissioner, who informed the surveyor of the intended improvements by the District authorities, their positions were fixed by measurements, by means of which they can be restored with unerring certainty after the improvements have been completed. In order to secure the points of surveys, measurements to fix their position were made on 219 avenues, streets, and alleys.

I renew my urgent recommendation in previous reports that the Commissioners

provide means by which this office may be furnished with data for surveys in the Anacostia district, in Georgetown, and in the extreme eastern section of the city proper. In Anacostia original lines of survey were made with such general carelessness and inaccuracy that the landmarks now commonly accepted and used by local surveyors have become of great value in that rapidly growing section. I recommend that Mr. William J. Latimer, surveyor, who has a large amount of valuable data among his personal records, be employed to make a map for this office, showing the location and means of identification of points of survey for all block corners and road lines and important landmarks generally throughout the whole of that part of the District south and east of the Eastern Branch; also, that Mr. Henry H. Brewer, surveyor, be employed to tabulate in similar form the essential data in his possession relating to block corners in Georgetown. Thus by obtaining this data, the best now possible, orders for surveys in these two localities, made by the Commissioners or by private individuals, may be executed without obtaining the unofficial assistance in almost every case arising of these two gentlemen, upon whose courtesy the surveyor's office is now so largely dependent.

In the eastern section of the city proper a great many of the original boundary stones of the squares remained undisturbed up to the date of the late civil war, when they were destroyed by the teams engaged in hauling supplies and material to the encampment and government buildings situated thereon. The replacing of them can be done better at this time, while the land is unoccupied, than at a later date, when built upon. This is a matter of grave importance, and I request the especial attention of the honorable Commissioners thereto. The planting of the stones can be done by the surveyor or assistant surveyor at times when not otherwise engaged. Thus contentions as to lines hereafter can be avoided. The sum of \$2,000, or so much thereof as may be necessary, is therefore requested, to cover the expenses of the maps heretofore mentioned and the corner stones or other means necessary in marking in a permanent manner of all points which, in the judgment of the surveyor, are worth preserving. Circumstances might easily arise at any time making the carrying out of these recommendations as to Georgetown and Anacostia almost, if not quite, impossible; and the rapidly increasing demand for surveys in the eastern section calls for speedy action there. Time is therefore important in all three cases.

In conclusion, I wish to acknowledge the faithful and efficient services rendered by the personnel of this office, and to acknowledge especially the services of Mr. Henry B. Looker, assistant surveyor, for the competent and energetic performance of the duties devolved upon him.

Very respectfully, your obedient servant,

WM. FORSYTH.

Surveyor, District of Columbia.

THE COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

REPORT OF THE SUPERINTENDENT OF THE PARKING COMMISSION.

WASHINGTON, July 16, 1897.

SIR: I have the honor to forward herewith the report for the year ending June 30, 1897.

Very respectfully,

TRUEMAN LANHAM,

Superintendent of Parking, District of Columbia.

THE ENGINEER COMMISSIONER OF THE DISTRICT OF COLUMBIA,
(Through Captain Burr.)

Five thousand young trees (seedlings) were set out in nursery rows, consisting of Norway, sugar, and soft maples, American lindens, American elms, "gingkos" (*Salisburias*), etc. An abundant supply of these and other kinds are in the nursery and of a proper size for planting on the streets. There are also thousands of seedlings in the seed beds of a proper size to set in nursery rows during the next autumn or the coming spring, of which "pin," "red," and "chestnut" oaks, Norway, Vermont, and Southern or black sugar maples, Oriental planes, elms, "gingkos," and soft maples form the majority. While there are yet some Carolina poplars in the nursery, the stock is not being increased, as no more are now being

planted on the streets, because of their destruction of sidewalks and the filling up of pipe sewers, etc.

The impression here has been that oak trees were of too slow growth for street planting, but where "pin" and "red" oaks have been properly planted their growth has been equal to any, excepting Carolina poplars, soft maples, and Oriental planes. On this account, therefore, a stock of these is now being grown that they may form a larger portion of the planting than heretofore and take the place of some of the softer-wooded trees. Chestnut oaks have not been grown, or planted on the streets, but from the fact that they are found growing in the District in the driest and most barren spots, it is thought that they might do well on the streets; hence a stock of seedlings of this variety has been grown with a view of giving them a trial.

One thousand four hundred and fifty-five trees were planted on the streets and roads of the city and District, a large portion of said planting having been done on Columbia Heights, Connecticut avenue extended, and Cleveland Park.

Notwithstanding the fact that the spring planting, because of the want of money, was not commenced until after April 8 (which was quite late), the moist weather of May and June caused them to make fine growth and they are now looking well.

One thousand one hundred and forty-one trees were blown down by the storm of September 29 ultimo, and many since have proved to have been so much injured that their removal has been necessary, and these, with the first-named, make the total removed about 1,400.

Three thousand eight hundred and sixty trees were protected from injury by horses, etc., by woven-wire coverings.

One thousand seven hundred and fifty wires which had become tight from the growth of trees have been readjusted and in some cases placed around smaller trees.

The entire lot of trees at the curbing in the northwest section of the city have thus been protected with wire, yet there are some trees in that section at present without wire, because of a few of the guards becoming too tight and being removed, with no wire on hand to replace them.

One hundred and fifty old and broken wooden tree boxes have been removed from trees which they no longer protected because of their condition and being unsightly.

But little was accomplished in the way of trimming and shaping the trees previous to the 29th of September last, when the storm occurred, and the money which would have been used for this purpose was used in removing blown-down and injured trees and in repairing storm damages generally.

The stakes and straps were broken loose from nearly all of the trees of the last four years' planting, which necessitated the purchase of additional stakes and straps, lumber for boxes, and additional cost of labor in preparation of same. The cost of labor alone because of this storm was nearly one-fourth of the annual appropriation.

The result was that the appropriation was practically used by the first of February. The work was stopped and not resumed until April 8, 1897, then without money and in anticipation of an appropriation of \$5,000 contained in the "general deficiency bill," which has not yet become a law. Since April 8, of the \$5,000 in the above-mentioned bill \$4,999.84 have been used for labor and cart hire, divided as follows:

Care of stables, sharpening and repairing tools, attending to police reports, cutting hides for straps, and giving special attention to matters requiring it.....	\$394.54
General work at the nursery.....	722.09
Paving around trees, cutting roots, and relaying brick sidewalks.....	739.43
General care of parkings, mowing grass, repairing temporary fences on Indiana avenue and New York avenue parkings.....	471.55
Trimming trees.....	627.25
Digging holes and planting trees.....	866.60
Cultivation of trees on streets.....	573.30
Readjusting tree wire guards.....	219.18
Removing dead trees.....	348.79
Removing caterpillars.....	37.11
Total.....	4,999.84

The cost of material charged to the annual appropriation was \$4,289.97. The total amount expended for labor under the annual appropriation of \$20,000 was \$15,710.03, divided as follows:

Care of office yard, stables, making and mending tools, removing tree boxes, attending to police reports, gathering seed, and attending to matters of special importance	\$1,185.41
General work at nursery, digging trees, making tree boxes, hauling manure, etc.	1,191.27
Cultivation of recently planted trees	1,306.04
Placing of wire guards around trees	517.00
Paving around newly planted trees, cutting roots, and relaying disturbed sidewalks	1,118.24
Removing caterpillars	537.70
Trimming trees on streets in regular order and attending to requests of this nature needing special attention	408.56
Care of parkings, seeding, mowing, and keeping temporary fences in repair, etc.	1,554.68
Digging tree holes, planting trees, boxing and strapping, etc	3,072.06
Removing blown-down trees, trimming trees, etc., rendered necessary by storm damage of September 29, 1896	4,819.07
Total	15,710.03

The wiring of trees should be continued, and a more substantial wire box used, if it can be found, and if the cost of same is within the ability of parking commission to purchase.

An effort should be made to replant all the missing trees in the established lines on streets this year, if possible. If this idea is carried out, however, there will be nothing left for planting trees on new streets, or parts of streets now ready, or where there are no trees. Whenever new streets are curbed, paved, and ready for tree planting, the owners of abutting property become clamorous for trees, and the result has been that the work of replanting trees in the older portions of the city has been pushed aside in consequence.

From the fact that it has been so difficult to get the appropriations for the planting of trees increased, I have thought it well, when the cost of improving a street is being estimated, that the sum of \$5 for every 35 feet of curb line might be added for tree-planting the same, as the improvement of no street is complete without trees. The sum of \$20,000 annually appropriated here is only about one-half enough for the care of more than 75,000 trees now on the streets and the continuation of tree planting. The planting of trees has not kept pace with other street improvements, and it is impossible to make it so, unless the appropriations are increased at least 100 per cent or the cost of planting new streets provided for as suggested.

Four foremen were temporarily employed during the month of July, 1896. One becoming physically unfitted for duty, only three were employed during the remainder of the year, and a man detailed from force to act as foreman when needed.

The amounts received by them was as follows:

Annual appropriation	\$1,424.23
General deficiency bill (when paid)	573.75
Emergency fund	54.75
Other appropriations	12.00
Total	2,064.73
Number of trees on streets as per last report	75,499
Planted during the year	1,455
Total	76,954
Removed during the year	1,400
Number now on the streets	75,554
Amount of annual appropriation	\$20,000.00
Amount expended for labor	15,710.03
Amount expended for material	4,289.97
Amount of appropriation, general deficiency bill	5,000.00
Amount expended for labor	4,999.84
Balance unexpended	.16

SUBDIVISION OF LANDS.

WASHINGTON, *September 30, 1897.*

SIR: I have the honor to submit the following report of work in this department for the fiscal year ending June 30, 1897:

The constitutionality of the highway act having been tested in the courts during the past two years, no section plans have been filed since the recording of the first section in August, 1895. The suburban parts of the District not covered by the first section, and known as sections 2, 3, and 4, have been studied in conjunction, so that their completion may follow in close order.

Tentative plans of these sections were well advanced more than a year ago, the past year adding more in detailed study and in the preparation of data for record. During the fall and winter a field force was kept almost constantly employed in the location of azimuth and street lines and in the accurate determination of points in the various subdivisions. The correct notation of all block distances, as required in the highway act, has necessitated careful work in the field, and all valuable points of reference have been preserved by suitable monuments.

The second section, which embraces the northeast suburbs between North Capitol street extended and the Anacostia River, has been completed for some time. The detail sheets were held in the office of the Commissioners of the District of Columbia pending the Supreme Court decision in May, when they were forwarded to the highway commission for final action. A duplicate set of the details was made during the fall for use in this office.

The third section, or the county west of Rock Creek, has demanded most of our attention in the office work. It covers a region varied in topography, offering easy studies on the high grounds and presenting some knotty problems in the eroded parts. Work done under the act of 1888 had already furnished a plan in the level tracts, and this was accepted with slight change. The whole section has received an exhaustive study, both as to details in grades and the broader considerations of harmony in plan. It was recognized at the start that a rigid system of right lines was impossible from a financial point. Diverse opinions were expressed by the property holders as to what extent a curved system should be allowed. The plan now offered is a combination of flat curves and direct lines and has met with general favor.

Studies of the section were made on four contour sheets drawn to a scale of 1 inch to 200 feet, with contours at 5 feet intervals, which were enlarged from the Coast Survey sheets. Independent maps or plans were prepared by the different parties in this office, and the map as finally submitted was one compiled from these separate studies.

The fourth section, or county east of the Anacostia River, has been entirely covered by a tentative plan which is not, however, considered satisfactory. Further study is needed and considerable field work is necessary before the section is finally prepared for record. The plans are laid down on maps similar to those prepared in studies of the third section.

Under the act of 1888, plats of subdivisions of land have been examined for conformity to the plans of this office, and surveys and plats have been made for the dedication of land in Cliffbourne, Sherman avenue, Griswold's subdivision, Chevy Chase drive, Connecticut avenue, Emporia street, Nebraska avenue, and the Barker tract.

In regard to the future work of this office it may be well to say that the recording of all sections is anticipated to be completed by the end of the present fiscal year. To provide for a finished condition to the plans I would respectfully suggest that as much of our present force as possible be retained. The filing of the plans will call for a more complete marking of streets upon the ground, a comprehensive study of grades, and a set of office or working maps drawn to a scale of 1 inch to 100 feet. Court proceedings may call for additional work from time to time, although the extent of such can not be estimated.

Very respectfully,

WM. P. RICHARDS,

Assistant Engineer, Street Extension.

Capt. W. M. BLACK,

Engineer Commissioner, District of Columbia.

REPORT OF THE CHIEF CLERK, ENGINEER DEPARTMENT.

CAPTAIN: I have the honor to submit the following report for the fiscal year ended June 30, 1897:

Communications received, briefed, and recorded in L. R. book.....	9,205
Indorsements, references, and reports on above.....	46,025
Letters and orders prepared.....	5,972
Copies of contracts drawn.....	668
Vouchers and bills prepared, recorded, and forwarded.....	5,069

Schedules of bids received during the fiscal year for work and materials under engineer office and statements of contracts for street improvements, sewers, construction material, supplies, and miscellaneous work are herewith.

Very respectfully,

A. Y. LAKENAN,

Chief Clerk, Engineer Department.

Capt. W. M. BLACK,

Corps of Engineers, U. S. A., Engineer Commissioner D. C.

Statement of contracts for the improvement of streets and roads for fiscal year 1897.

No. of contract.	Date.	Name and address of contractor.	Location.	Character of work.
	1896.			
2308	July 25	James O'Day, Washington, D. C.	Illinois avenue	Grade.
2312	July 28	A. Gleeson & Co., Washington, D. C.	Yale, Bismark, Princeton, Harvard, and Columbia.	Do.
2320	July 31	Darius Gaskins, Washington, D. C.	Massachusetts avenue extended	Do.
2335	Aug. 26	Washington Asphalt Block and Tile Co., Washington, D. C.	F SW., from Seventh to Tenth, and I SW., from Third to Sixth.	Lay asphalt block pavement.
2337	Aug. 27	M. F. Talty, Washington, D. C.	M NE., from Second to Fourth.	Grade, and remove and pile curb and sidewalk brick.
2338	do	R. Horn & W. Hussey, Washington, D. C.	Roanoke, from Sherman avenue to Thirteenth.	Remove material from and deposit in Harvard, from Sherman avenue to Thirteenth.
2340	Aug. 25	J. Frawley, Washington, D. C.	Kentucky avenue SE., from Lincoln square to B, and Thirteenth SE., from East Capitol to D. Florida avenue NE., from Ninth to M.	Grade, set curb, pave gutters, lay flag crossings, and gravel roadway. Grade, set curb, pave gutters, lay flag crossings, and macadam roadway.
2341	Aug. 28	G. B. Mullin, Washington, D. C.	Connecticut avenue extended, west of Rock Creek.	Grade.
2343	Aug. 29	F. M. Kemp & Sons, Middletown, Ohio.	Upon such sidewalks as are ordered paved.	Lay cement pavement.
2350	Sept. 16	Barber Asphalt Paving Co., New York City.	Upon such streets and avenues as are ordered paved.	Lay standard asphalt pavement.
2372	Dec. 3	R. Seek, Takoma, Md	Erie, from Meridian avenue to Central avenue.	Grade.
2373	Dec. 5	G. B. Mullin, Washington, D. C.	Pierce, from Jefferson to High, and High, from Pierce to Arthur, Anacostia, D. C.	Do.
2379	Mar. 16	Washington Asphalt Block and Tile Co.	L, from Fourth to Eighth	Grade, haul and set curb, lay cobble gutters, and gravel roadway.
2385	Apr. 15	M. F. Talty, Washington, D. C.	North Capitol street through and north of Prospect Hill Cemetery.	Grade.
2386	Apr. 17	Jos. Robson, Washington, D. C.	Over Piney Branch at Illinois avenue.	Construct culvert.
2404	June 28	Richard Horn & Son, Washington, D. C.	Alleys, square 457	Pave with vitrified block.

Statement of contracts for constructing sewers during fiscal year 1897.

No. of contract.	Date.	Name and address of contractor.	Location.	To construct
	1896.			
2323	Aug. 8	E. G. Gummel, Washington, D. C.	Fourteenth street NW., from Park to Center Princeton street NW., from Sherman avenue to Thirteenth A street SE., from Massachusetts avenue to Fourteenth	1,530 linear feet 4.5 by 3.75 feet pipe sewer. 250 linear feet 2.5 by 3.35 feet pipe sewer. 345 linear feet 2 by 3 feet pipe sewer. 840 linear feet 24-inch pipe sewer. 520 linear feet 21-inch pipe sewer.
2324	Aug. 12	Thos. Buckley, Washington, D. C.	B street SE., from Thirteenth to Fourteenth	500 linear feet 21-inch pipe sewer.
2325	Aug. 5	Jno. J. Shipman, Washington, D. C.	Ninth street SE., from Virginia avenue to M. Fifth street, Petworth, from Newark to Omaha Flagler place, from V street to Reservoir sewer	570 linear feet 21-inch pipe sewer. 300 linear feet 2 by 3 feet sewer. 1,200 linear feet 6.55 feet diameter circular sewer.
2328	Aug. 12	Lyons Bros., Washington, D. C.	F street, portion of F street, and Eashy's Point intercepting sewer.	725 linear feet 6.50 feet diameter circular sewer. 1,100 linear feet 6.25 feet diameter circular sewer.
2340	Oct. 16	Jas. McCandlish, Washington, D. C.	Canal street SE., from N to Anacostia River I street SW., from First to Delaware avenue I street SW., from Delaware avenue to Second Third street SW., from G to I Third street SW., from F to G Third street SW., from E to F E street SW., from Third to Four-and-a-half Third street NE., from F to G Whitney avenue, from Fourteenth street to Holmead avenue Thirty-fifth street NW., from U to Madison Line of alley between Richmond and Savannah streets, from Minnesota to Brightwood avenue Brightwood avenue, from Quincy to Savannah and Quincy, from Brightwood avenue and Eighth Valley of Piney Branch, from Trenton to Brandywine avenue, from Brandywine to Flint, and Brightwood avenue, from Flint to Niagara.	235 linear feet 6 feet diameter circular sewer. 880 linear feet 4.5 feet diameter circular sewer. 650 linear feet 4.25 feet diameter circular sewer. 510 linear feet connections. 640 linear feet 24-inch pipe sewer. 220 linear feet 5.25 feet circular sewer. 200 linear feet 4.75 feet circular sewer. 485 linear feet 4.5 feet circular sewer. 690 linear feet 3 by 4.5 feet egg-shaped sewer. 310 linear feet 3.25 by 4.875 feet egg-shaped sewer. 342 linear feet 3 by 4.5 feet egg-shaped sewer. 570 linear feet 2.75 by 4.125 feet egg-shaped sewer. 570 linear feet 24-inch pipe sewer. 610 linear feet 21-inch pipe sewer.
2347	Nov. 23	Guiney & Coyle, Washington, D. C.	Whitney avenue, from Fourteenth street to Holmead avenue	1,100 linear feet 12-inch pipe sewer. 3,400 linear feet 18-inch pipe sewer.
2348	Nov. 24	Adam McCandlish, Washington, D. C.	Line of alley between Richmond and Savannah streets, from Minnesota to Brightwood avenue	3,900 linear feet 21-inch pipe sewer.
2367	Apr. 23	do	Brightwood avenue, from Flint to Niagara	4,100 linear feet 12-inch pipe sewer.
2380	May 19	R. M. Moore & Co., Philadelphia, Pa.	Illinois avenue, from Brandywine to Flint, and Brightwood avenue, from Flint to Niagara	550 linear feet 6 foot 3 inch pipe sewer. 300 linear feet 4 foot 3 inch circular sewer.
2383	June 4	Andrew Gleeson, Washington, D. C.	Sixth street, from K to N SE.	415 linear feet 12-inch pipe sewer. 1,075 linear feet 12-inch pipe sewer.
2384	do	E. G. Gummel, Washington, D. C.	C street, from Delaware avenue to First NE P street, from Thirty-first to Valley NW T street, from Ninth to Tenth NW Providence street, from Twelfth to Thirteenth, Brookland.	520 linear feet 12-inch pipe sewer. 660 linear feet 15-inch pipe sewer.

Statement of contracts for constructing sewers during fiscal year 1897.—Continued.

No. of contract.	Date.	Name and address of contractor.	Location.	To construct.
1896.				
2394	June 4	E. G. Gammel, Washington, D. C.	Woodley road, from Connecticut avenue to Belmont avenue NW. Connecticut avenue, from Woodley road to Kalorama avenue NW. Twentieth street, from Woodley road to Kalorama avenue NW. Fifteenth street, from Georgia avenue to C street SE. Alley of square 1075. Eighth street, from B to C SE. W street, from Fourteenth to Fifteenth NW. Fifteenth and New Hampshire avenue, from V to W NW. V street, from New Hampshire avenue to Seventh street NW. Thirtieth street, from N to O NW. S street, from Florida avenue to Connecticut avenue NW. G street, from New Hampshire avenue to Twenty-seventh NW. D street, from Fourteenth to Fifteenth NE. Thirtieth street, from C to D NE. D street, from Thirtieth to Tennessee avenue NE. Fourteenth street, from East Capitol to A street NE. Kalorama avenue, from Nineteenth to Twenty-third NW. Sixteenth street, from Georgia avenue to D SE. G street, from Seventeenth to Nineteenth NW. S street, from Thirty-fourth to Thirty-fifth NW. Seventeenth street, from B to Massachusetts avenue SE. Hampton place, from Twentieth to Rock Creek NW. Twentieth street, from Hampton place to Connecticut street NW.	180 linear feet 24-inch pipe sewer. 720 linear feet 24-inch pipe sewer. 210 linear feet 12-inch pipe sewer. 500 linear feet 24-inch pipe sewer. 485 linear feet 24-inch pipe sewer. 485 linear feet 12-inch pipe sewer. 310 linear feet 12-inch pipe sewer. 57 linear feet 18-inch pipe sewer. 510 linear feet 15-inch pipe sewer. 53 linear feet 15-inch pipe sewer. 150 linear feet 18-inch pipe sewer. 575 linear feet 21-inch pipe sewer. 485 linear feet 18-inch pipe sewer. 935 linear feet 24-inch pipe sewer. 380 linear feet 18-inch pipe sewer. 140 linear feet 21-inch pipe sewer. 580 linear feet 24-inch pipe sewer. 570 linear feet 18-inch pipe sewer. 290 linear feet 21-inch pipe sewer. 290 linear feet 15-inch pipe sewer. 380 linear feet 15-inch pipe sewer. 640 linear feet 21-inch pipe sewer. 375 linear feet 21-inch pipe sewer. 1,000 linear feet 12-inch pipe sewer. 380 linear feet 21-inch pipe sewer. 255 linear feet 18-inch pipe sewer. 100 linear feet 12-inch pipe sewer. 485 linear feet 18-inch pipe sewer. 120 linear feet 12-inch pipe sewer. 190 linear feet 12-inch pipe sewer. 355 linear feet 15-inch pipe sewer. 350 linear feet 24-inch pipe sewer. 500 linear feet 30-inch pipe sewer. 390 linear feet 24-inch pipe sewer.
2395	June 8	James McCandlish, Washington, D. C.		
2396	June 11	Baldon & Wormley, Washington, D. C.		
2407	June 29	W. H. H. Allen, Washington, D. C.		

Statement of contracts for furnishing construction material for fiscal year 1897.

No. of contract.	Date.	Name and address of contractor.	To furnish—
	1896.		
2265	July 13	M. J. Drummond, New York City	Cast-iron water pipe.
2276	July 10	Chatto & Condon, Brookville, Me.	Granite curbing.
2280	July 20	Columbia National Sand Dredging Co., Washington, D. C.	Sand and pebbles.
2295	July 21	John B. Lord, Washington, D. C.	Sand.
2296	July 10	Pennsylvania Globe Gaslight Co., Philadelphia, Pa.	Street lanterns.
2311	July 22	J. Merrick Horn, Wilmington, Del.	Granite curbing.
2319	July 29	Midvale Foundry Co., Allentown, Pa.	Lamp-posts.
2321	Aug. 5	John Miller, Washington, D. C.	Sewer bricks.
2331	Aug. 24	Lawrenceville Cement Co., New York City.	Natural hydraulic cement.
2336	Aug. 27	Charles Ford, Washington, D. C.	Paving bricks.
2339	Aug. 25	Dunbar Bros., Sullivan, Me.	Granite curbing.
2345	Aug. 28	John Miller, Washington, D. C.	Paving bricks.
2346	Sept. 3	Jas. H. McGill, Washington, D. C.	Portland cement.
2348	Sept. 15	Washington Asphalt Block and Tile Co., Washington, D. C.	Asphalt paving blocks.
2351	Sept. 21	Angus Lamond, Takoma, D. C.	Invert blocks for sewers.
2352	Sept. 24	Potomac Terra Cotta Co., Washington, D. C.	Terra cotta sewer pipe.
2353	Sept. 25	T. Somerville & Sons, Washington, D. C.	Do.
2356	Sept. 24	Savage Fire Brick Co., Keystone Junction, Pa.	Vitrified bricks for sewer inverts.
2362	Oct. 26	T. Somerville & Sons, Washington, D. C.	Terra cotta sewer pipe.
2363	Oct. 24	Savage Fire Brick Co., Keystone Junction, Pa.	Re-pressed vitrified paving bricks.
2364	Oct. 26	McMahan, Porter & Co., New Cumberland, W. Va.	Do.
2365	Oct. 27	John M. Mack, Philadelphia, Pa.	Do.
2366	Oct. 23	Potomac Terra Cotta Co., Washington, D. C.	Terra cotta sewer pipe.
2375	Dec. 28	M. J. Drummond, New York City	Street and fire hydrants.
	1897.		
2377	Mar. 1	John P. Gordon, Franklin, Me.	Granite curbing.
2378	Feb. 26	J. Merrick Horn, Wilmington, Del.	Do.
2388	Apr. 29	Midvale Foundry Co., Allentown, Pa.	Lamp-posts.
2403	June 25	Thos. Somerville & Sons, Washington, D. C.	Sewer pipe.
2408	.....do.....	Potomac Terra Cotta Co., Washington, D. C.	Terra cotta sewer pipe and branches.

Statement of construction, hauling, and miscellaneous contracts for fiscal year 1897.

No. of contract.	Date.	Name and address of contractor.	Description.
	1896.		
2242	July 2	Littlefield, Alvord & Co., Washington, D. C.	Haul vitrified block, paving bricks, and curb.
2246	July 9	Darius Gaskins, Washington, D. C.	Haul sand, vitrified block, and bricks.
2283	July 15	American Fire Engine Co., Seneca Falls, N. Y.	Furnish 2 Clapp & Jones fire engines.
2286	July 17	W. W. Winfree, Washington, D. C.	Reconstructing and enlarging Wallach school building.
2297	July 20	Potomac Electric Power Co., Washington, D. C.	Furnish, operate, repair, and maintain 50 or more incandescent electric lights in various localities.
2310	July 23	W. C. Miller, Washington, D. C.	Drive deep wells.
2318	July 24	Manchester Locomotive Works, Manchester, N. H.	Furnish fire engine.
2327	Aug. 3	Pennsylvania Globe Gaslight Co., Philadelphia, Pa.	Furnish, operate, and maintain naphtha lights.
2329	July 31	Washington Gaslight Co., Washington, D. C.	Supply illuminating gas, etc., and maintain gas-lighting service.
2330	Aug. 19	Georgetown Gaslight Co., Washington, D. C.	Do.
2344	Sept. 2	A. Davis, jr., Fairfax, Va.	Furnish and set telegraph poles.
2347	Sept. 12	Preston Dudley, Washington, D. C.	Raise and move house of Isadore Duchesne on Sherman avenue.
2349	Sept. 15	Warren W. Biggs, Washington, D. C.	Construct heating apparatus at smallpox hospital, reservation 13.
2354	Sept. 23	Richard Seek, Takoma, Md.	Raise and move house of D. C. Murphy on Sherman avenue.
2355	Sept. 29	Henry F. Getz, Washington, D. C.	Take down old building and construct new one at Garfield Hospital.
2357	Oct. 2	C. Thomas & Son, Washington, D. C.	Construct engine house in Bloomingdale, D. C.

270 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

Statement of construction, hauling, and miscellaneous contracts, etc.—Continued.

No. of contract.	Date.	Name and address of contractor.	Description.
2358	Oct. 7	Pavarini & Greer, Washington, D. C.	Construct frame schoolhouse in Langdon, D. C.
2359	Oct. 14	C. Thomas & Son, Washington, D. C.	Construct additional story and tower to schoolhouse at Congress Heights, D. C.
2369	Nov. 25	do	Construct schoolhouse at Fifth and K streets NE.
2370	Nov. 30	H. I. Gregory, Washington, D. C.	Construct heating apparatus in schoolhouse Fifth and K streets NE.
2371	Dec. 2	Potomac Electric Power Co., Washington, D. C.	Furnish and maintain electric arc lamps.
2374	Nov. 23	W. F. Beers & Co., Washington, D. C.	Construct schoolhouse near Conduit road, District Columbia.
2376	Dec. 30	James M. Dunn, Washington, D. C.	Construct engine house in Brightwood, D. C.
2380	Mar. 19	William C. Peake, Washington, D. C.	To erect the Western High School building.
2381	Mar. 24	Peter McCartney, Washington, D. C.	Construct school building southeast corner Ninth and E streets SW.
2382	Mar. 27	H. I. Gregory, Washington, D. C.	Furnish hot-air furnaces for school building, Ninth and E streets SW.
2383	Mar. 29	C. A. Dean and Geo. McDermott, Alexandria, Va.	Construct new hull and make repairs to harbor boat <i>Joe Blackburn</i> .
2389	May 5	H. I. Gregory, Washington, D. C.	Construct Smead heating and ventilating apparatus in Congress Heights school building.
2392	June 2	Washington Gaslight Co., Washington, D. C.	Supply illuminating gas and maintain service.
2395	June 4	Georgetown Gaslight Co., Washington, D. C.	Do.
2396	June 3	Pennsylvania Globe Gaslight Co., Washington, D. C.	Furnish, operate, and maintain naphtha lamps.
2398	June 9	Potomac Electric Power Co., Washington, D. C.	Furnish, operate, and maintain incandescent electric lamps.
2400	June 16	do	Furnish, operate, and maintain electric arc lamps.
2401	June 18	R. V. Rusk, Washington, D. C.	Clean unpaved alleys and streets.
2402	June 24	F. Springmann, Washington, D. C.	Haul pipes, castings, hydrants, valves, etc.
2406	June 28	Philadelphia Steam Heating Co., Philadelphia, Pa.	Construct heating plant for hospital department, Washington Asylum.

Statement of contracts for general supplies for fiscal year 1897.

No. of contract.	Date.	Name and address of contractor.	To furnish
2240	1896, June 26	Royce & Marean, Washington, D. C.	Telegraph and telephone supplies.
2241	June 29	H. I. Gregory, Washington, D. C.	Tinware.
2243	July 7	W. M. Galt & Co., Washington, D. C.	Groceries.
2244	do	do	Forage.
2245	do	Hartman & Cadick, Washington, D. C.	Blank forms, and printing.
2247	July 8	W. H. Butler, Washington, D. C.	Glass, paints, and varnish.
2248	July 9	Geo. White's Sons, Washington, D. C.	Miscellaneous castings.
2249	July 8	John B. Daish, Washington, D. C.	Groceries.
2250	do	do	Forage.
2251	July 9	W. T. Galliher & Bro., Washington, D. C.	Lumber.
2252	do	Mitchell & Reed, Washington, D. C.	Plumber's material.
2253	July 10	Z. D. Gilman, Washington, D. C.	Drugs.
2254	do	Jas. F. Oyster, Washington, D. C.	Groceries.
2255	July 9	M. W. Beveridge, Washington, D. C.	Furniture.
2256	July 10	C. G. Stott & Co., Washington, D. C.	Stationery.
2257	do	B. Rich & Sons, Washington, D. C.	Dry goods.
2259	do	do	Boots and shoes.
2259	do	Lutz & Co., Washington, D. C.	Saddlery.
2260	July 11	Frank Lillie, Washington, D. C.	Fuel.
2261	July 10	Easton & Rupp, Washington, D. C.	Stationery.
2262	July 13	Rufus P. Clarke, Washington, D. C.	Dry goods.
2263	do	H. P. Pillsbury, Washington, D. C.	Forage.
2264	do	Johnson Bros., Washington, D. C.	Fuel.

Statement of contract for general supplies for fiscal year 1897—Continued.

No. of contract.	Date.	Name and address of contractor.	To furnish—
2266	July 14	Scheller & Stevens, Washington, D. C.	Drugs.
2267	do	Kennedy & Du Perow, Washington, D. C.	Telegraph and telephone supplies.
2268	July 11	F. P. May & Co., Washington, D. C.	Tinware.
2269	do	do	Hardware.
2270	July 14	Lansburg & Bro., Washington, D. C.	Dry goods.
2271	July 10	John Wanamaker, Philadelphia, Pa.	Stationery.
2272	do	do	Furniture.
2273	do	do	Dry goods.
2274	July 14	F. A. Schmidt, Washington, D. C.	Stationery.
2275	July 8	Jas. E. Stake, Washington, D. C.	Groceries.
2276	July 16	Great Falls Ice Co., Washington, D. C.	Ice.
2277	July 13	E. H. Hood, Washington, D. C.	Miscellaneous castings.
2278	July 11	Riley & Walker, Washington, D. C.	Lumber.
2279	July 15	V. Baldwin Johnson, Washington, D. C.	Fuel.
2280	do	R. C. Ballantyne, Washington, D. C.	School books.
2281	do	do	Stationery.
2282	July 9	T. Somerville & Sons, Washington, D. C.	Plumbers' material.
2283	July 17	Somerset R. Waters, Washington, D. C.	Groceries.
2284	do	Mackall Bros. and Flemer, Washington, D. C.	Drugs.
2285	do	do	Glass, paints, and varnish.
2286	July 16	B. S. Adams, Washington, D. C.	Blank forms and printing.
2287	July 17	John J. O'Day, Washington, D. C.	Forage.
2288	July 16	Thos. T. Keane, Washington, D. C.	Fresh meat and corned beef.
2289	July 11	Church & Stephenson, Washington, D. C.	Lumber.
2290	July 13	M. J. Drummond, New York City	Plumbers' material.
2291	July 21	J. C. Ergood & Co., Washington, D. C.	Groceries.
2292	do	Frank Hume, Washington, D. C.	Do.
2293	July 14	New York Lubricating Oil Co., New York City.	Oil.
2294	July 21	Austin, Nichols & Co., New York City	Groceries.
2295	July 23	I. Clark Seamans, New York City	Stationery.
2296	July 20	Hyman Powdermaker, Washington, D. C.	Fresh meat and corned beef.
2297	July 23	George F. Muth & Co., Washington, D. C.	Stationery.
2298	do	do	Hardware.
2299	do	do	Glass, paints, and varnish.
2300	July 24	E. A. Tachiffely, Washington, D. C.	Drugs.
2301	do	P. H. Sheehy, Washington, D. C.	Groceries.
2302	July 10	Blum Bros., Washington, D. C.	Do.
2303	do	do	Tinware.
2304	do	do	Dry goods.
2305	do	do	Furniture.
2306	do	do	Hardware.
2307	do	do	Furniture.
2308	Aug. 5	Dunlap Printing Co., Philadelphia, Pa.	Blank forms and printing.
2309	July 28	W. B. Moses & Sons, Washington, D. C.	Furniture.
2310	Aug. 19	W. A. Pate, Washington, D. C.	Hardware.
2311	do	do	Saddlery.
2312	do	do	Telegraph and telephone supplies.
2313	Aug. 31	Charles E. Hoover, Washington, D. C.	Fresh meat and corned beef.

Proposals for driving wells, opened July 8, 1896.

[Price per linear foot.]

Name and address of bidder.	Through sand or gravel.	Through earth or clay.	Through soft rock.	Through hard rock.	Drive-pipe or casing in well.
Wm. C. Miller, Anacostia, D. C.	\$0.98	\$0.98	\$1.75	\$2.15	\$0.68
W. E. De Witt, Washington, D. C.	1.54	1.32	1.82	2.99	.67
Lyman W. Shepard, Leesburg, Va.	1.50	.90	1.30	2.70	.95
P. H. & J. Conlan, Newark, N. J.	2.25	2.00	2.50	3.00	(d)
M. Cormick & Kaufman, Washington, D. C.	1.36	1.06	1.95	2.85	.66
Hydraulic Construction Co., New York City	3.65	3.65	5.00	5.50	.45
Thos. B. Harper, Jenkintown, Pa.	1.25	1.25	2.00	3.00	.85
Sam'l. Lloyd, Washington, D. C.	1.80	1.00	1.90	2.80	.74
The Natl. Boring and Drilling Co., Scranton, Pa.					
Wallace Stebbins, Baltimore, Md.					

a Bid accepted.

b Alternative bid for each foot: 1 to 50 feet, \$3; 50 to 100 feet, \$3.50; 100 to 150 feet, \$3.75; 150 to 200 feet, \$4; 200 to 250 feet, \$5.

c Bid received after opening; not considered.

d Market price.

272 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

Proposals for the construction of sewers, opened August 1, 1896.

Name and address of bidder.	Sewer A. 1,200 linear feet of 6.55-inch diameter sewer in Flagger place, between V street and outlet of reservoir sewer. (Price per cubic yard.)				Sewer B. in Fourteenth street road, between Park and Center streets. (Price per linear foot.)				Sewer C. Fifth street, between Newark and Omaha streets. (Price per linear foot.)	
	For excavation above sewer subgrade, including excavation for manholes, etc.	For brick masonry laid in natural cement mortar, including plastering, etc.	For vitrified-brick masonry in Portland cement.	For concrete masonry in place with natural cement mortar.	1,550 linear feet 2.5 by 3.75 inch sewer.	270 linear feet 2.25 by 3.375 inch sewer.	345 linear feet 2 by 3 inch sewer.	Manholes, each.	300 linear feet of 2 by 3 inch sewer.	Manholes.
John P. Larguey, Washington, D. C.	\$0.28	\$2.00	\$16.00	\$5.00	\$5.60	\$5.30	\$4.65	\$23.00	--	--
T. M. Leshner & Son, Easton, Pa.	.46	9.00	15.00	6.00	-----	-----	-----	-----	-----	-----
B. J. Coyle, Washington, D. C.	.48	9.00	19.00	6.00	6.37	6.55	5.50	30.00	-----	-----
Lyons Bros., Washington, D. C.	.30	7.73	15.50	4.42	4.88	4.74	4.65	30.00	-----	-----
John Jacoby, Wilmington, Del.	.40	8.00	17.50	5.00	5.50	5.00	4.25	35.00	-----	-----
Thos. Buckley, Washington, D. C.	.45	9.53	18.10	5.50	6.20	5.98	5.14	30.00	a\$4.91 a\$25.00	-----
John J. Shipman, Washington, D. C.	a.39	a 6.98	a 14.00	a 4.90	5.65	4.90	4.70	35.00	-----	-----
Horn & Hussey, Washington, D. C.	.30	8.72	16.29	5.24	7.97	7.50	5.80	30.00	-----	-----
E. G. Gummel, Washington, D. C.	.27	7.87	15.87	4.71	a 4.85	a 4.22	a 4.02	a 25.00	4.95	25.00
H. C. Bolden, Washington, D. C.	.72	8.95	15.25	4.85	6.40	5.95	5.35	28.00	8.90	30.00
Jas. McCandlish, Washington, D. C.	.25	8.00	15.00	5.18	5.73	5.25	4.70	30.00	-----	-----
Guinney & Coyle, Washington, D. C.	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Name and address of bidder.	Sewer D. Princeton street, between Sherman avenue and Thirtieth street. (Price per linear foot.)		Sewer E. A street SE., between Massachusetts avenue and Fourteenth street. (Price per linear foot.)		Sewer F. B street SE., between Thirtieth and Fourteenth streets. (Price per linear foot.)		Sewer G. Ninth street SE., between Virginia avenue and M street. (Price per linear foot.)	
	840 linear feet of 24-inch pipe sewer.	Manholes, each.	520 linear feet of 21-inch pipe sewer.	Manholes, each.	500 linear feet of 21-inch pipe sewer.	Manholes, each.	570 linear feet of 21-inch pipe sewer.	Manholes, each.
John P. Larguey, Washington, D. C.	\$1.90	\$25.00	\$1.60	\$25.00	\$1.60	\$25.00	\$1.60	\$25.00
T. M. Leshner & Son, Easton, Pa.	-----	-----	-----	-----	-----	-----	-----	-----
B. J. Coyle, Washington, D. C.	1.81	23.00	1.70	25.00	1.65	25.00	1.55	25.00
Lyons Bros., Washington, D. C.	-----	-----	-----	-----	-----	-----	-----	-----
John Jacoby, Wilmington, Del.	1.65	25.00	1.55	26.00	1.50	25.00	1.48	20.00
Thos. Buckley, Washington, D. C.	-----	-----	-----	-----	-----	-----	-----	-----
John J. Shipman, Washington, D. C.	2.20	25.00	1.92	25.00	1.92	25.00	1.92	25.00
Horn & Hussey, Washington, D. C.	a 1.52	a 25.00	a 1.37	a 25.00	a 1.34	a 25.00	a 1.33	a 25.00
E. G. Gummel, Washington, D. C.	-----	-----	-----	-----	-----	-----	-----	-----
H. C. Bolden, Washington, D. C.	-----	-----	-----	-----	-----	-----	-----	-----
Jas. McCandlish, Washington, D. C.	-----	-----	-----	-----	-----	-----	-----	-----
Guinney & Coyle, Washington, D. C.	1.85	18.00	1.68	17.00	1.65	17.00	1.60	17.00

a Bid accepted.

Proposals for construction of sewers, opened October 10, 1896.

Name and address of bidder.	640 linear feet of 24 inch pipe sewer in Canal street SE., between N street and Anastasia River (per linear foot).
James McCandlish, Washington, D. C.....	a \$1.35
E. G. Gummel, Washington, D. C.....	1.39
John P. Larguey, Washington, D. C.....	1.75

a Bid accepted.

Proposals for the construction of sewers, opened September 28, 1896.

Name and address of bidder.	Sewer A, Ist street SW., between First and Third streets, and Third street SW., between G and I streets.				
	For excavation above sewer sub-grade, including manholes, etc. (5,117 cubic yards), per cubic yard.	For brick masonry laid in natural cement mortar (398 cubic yards), per cubic yard.	For vitrified brick masonry laid in Portland cement mortar (98 cubic yards), per cubic yard.	For vitrified block invert laid in Portland cement mortar (1,565 linear feet), per linear foot.	For concrete masonry in place, including all forms, etc. (345 cubic yards), per cubic yard.
R. M. Moore & Co., Philadelphia, Pa., a.....	\$0.48	\$9.54	\$15.49	\$0.75	\$4.24
Jno. P. Larguey, Washington, D. C.....	.60	9.00	18.00	.85	6.00
E. G. Gummel, Washington, D. C.....	.65	7.97	15.87	.70	4.41
Jno. J. Shipman, Washington, D. C.....	.60	7.50	14.00	.75	4.50
Jas. McCandlish, Washington, D. C.....	.67	7.70	15.50	.77	4.44

Name and address of bidder.	Sewer B, Third street SW., between E and G streets, and E street SW., between Third and Four-and-a-half streets.				
	For excavation above sewer sub-grade, including manholes, (2,860 cubic yards), per cubic yard.	For brick masonry laid in natural cement mortar (253 cubic yards), per cubic yard.	For vitrified brick masonry laid in Portland cement mortar (53 cubic yards), per cubic yard.	For vitrified block invert laid in Portland cement mortar (1,222 linear feet), per linear foot.	For concrete masonry in place, including forms, etc., per cubic yard.
R. M. Moore & Co., Philadelphia, Pa., a.....	\$0.48	\$7.54	\$15.49	\$0.75	\$4.24
Jno. P. Larguey, Washington, D. C.....	.70	9.50	19.00	.90	6.50
E. G. Gummel, Washington, D. C.....	.65	7.97	15.87	.70	4.41
Jno. J. Shipman, Washington, D. C.....	.65	8.00	16.00	.70	4.50
Jas. McCandlish, Washington, D. C.....	.77	7.70	15.50	.77	4.44

a Bid accepted.

Proposals for construction of sewers, opened November 16, 1896.

Name of bidder.	Sewer A, Whitney avenue, between Holmead avenue and Fourteenth street (610 linear feet), 21-inch pipe.		Sewer B, Third street, between F and G streets north-east (570 linear feet), 24-inch pipe.		Sewer C, Thirty-fifth street, between U and Madison streets (1,100 linear feet), 12-inch pipe.	
	Sewer.	Three manholes.	Sewer.	Three manholes.	Sewer.	Seven manholes.
	Lin. feet.	Each.	Lin. feet.	Each.	Lin. feet.	Each.
Adam McCandlish.....	a \$1.15	a \$60.00	\$1.75	\$90.00	a \$0.75	a \$140.00
Guiney & Coyle.....	1.30	42.00	a 1.74	a 60.00	.90	98.00
E. G. Gummel.....	1.22	75.00	1.70	90.00	.81	175.00

a Bid accepted.

Proposals for the construction of sewers: opened March 17, 1897.

[Sewers, price per linear foot; manholes, each.]

Name and address of bidder.	Sewer A.			Sewer B.		
	2,500 linear feet of 24-inch pipe sewer in valley of Piney Branch, between Fourteenth street road and Savannah street.	Manholes for same.	700 linear feet of 21-inch pipe sewer in valley of Piney Branch, between Savannah and Trenton streets.	2,100 linear feet of 24-inch pipe sewer in valley of Piney Branch, between Fourteenth street road and Savannah street.	Manholes for same.	800 linear feet of 21-inch pipe sewer in valley of Piney Branch, between Savannah and Trenton streets.
R. M. Moore & Co., Philadelphia, Pa.	\$1.51	\$2	\$1.38	\$1.70	\$2	\$1.52
James Frawley, Washington, D. C.	1.50	2	1.77	1.83	2	1.52
Adam McCandlish, Washington, D. C.	1.57	2	1.35	1.50	2	1.52
John Jacoby, Wilmington, Del.	2.10	2	2.35	1.10	2	1.52
Andrew Gleeson, Washington, D. C.	1.33	2	1.31	1.00	2	1.52
E. G. Gummel, Washington, D. C.	1.33	2	1.44	1.75	2	1.52
James McCandlish, Washington, D. C.	1.45	2	1.45	1.60	2	1.80
B. J. Coyle, Washington, D. C.	1.55	2	1.60	2.32	2	1.70
Name and address of bidder.	Sewer C.			Sewer D.		
	3,000 linear feet of 21-inch pipe sewer in valley of Piney Branch, between Trenton and Brandyswile streets.	Manholes for same.	4,100 linear feet of 12-inch pipe sewer in Illinois avenue, between Brandyswile and Flint streets, and Brightwood avenue, between Flint and Niagara streets.	Manholes for same.	3,400 linear feet of 18-inch pipe sewer in line of alley, between Richmond and Savannah streets, from Minnesota avenue to Brightwood avenue, and in Brightwood avenue, between Quincy and Savannah streets, and in Quincy, between Brightwood avenue and Eighth street.	Manholes for same.
R. M. Moore & Co., Philadelphia, Pa.	\$1.30	\$2	\$0.85	\$25.00	\$1.39	\$2
James Frawley, Washington, D. C.	1.29	2	.79	19.50	1.25	2
Adam McCandlish, Washington, D. C.	1.05	2	.87	35.00	1.70	2
John Jacoby, Wilmington, Del.	2.34	2	1.25	35.00	1.70	2
Andrew Gleeson, Washington, D. C.	1.70	2	1.15	32.00	1.35	2
E. G. Gummel, Washington, D. C.	1.51	2	.98	32.00	1.60	2
James McCandlish, Washington, D. C.	1.70	2	.88	34.00	1.40	2
B. J. Coyle, Washington, D. C.	1.60	2	1.02	35.00		2

Proposals for sewers, opened May 22, 1897.

Name of bidder.	Sewer A.				Total.
	Excava- tion (4,000 yards).	Brick masonry, natural cem- ent (335 yards).	Vitrified brick ma- sonry, Port- land cement (82 yards).	Concrete masonry (840 yards).	
Wormley & Bolden	\$1.25	\$15.95	\$19.95	\$7.85	\$19,323.15
E. G. Gummel .....	.44	8.54	17.74	5.44	10,842.18
Jas. McCandlish .....	.55	7.96	17.96	4.94	10,818.92
Andrew Hecson .....	.40	8.00	16.00	5.20	19,200.00
Jno. Jacoby .....	.55	8.25	18.00	5.50	11,389.75
Cranford Paving Co. ....	.575	8.44	17.325	5.1375	11,208.55
B. J. Sullivan	1.15	9.00	18.00	6.25	15,031.00

Name of bidder.	Sewer B.			Sewer C.		
	12-inch (415 ft.).	Man- holes (2).	Total.	12-inch (1,075 ft.).	Man- holes (6).	Total.
Wormley & Bolden	\$1.15	\$24.00	\$525.25	\$1.50	\$25.00	\$1,762.50
E. G. Gummel .....	.86	25.00	406.00	.92	25.00	1,139.00
Jas. McCandlish	1.04	22.00	475.00	1.14	25.00	1,375.50
Jno. Jacoby	1.00	35.00	485.00	1.00	35.00	1,255.00

Name of bidder.	Sewer D.			Sewer E.		
	12-inch (520 ft.).	Man- holes (3).	Total.	15-inch (660 ft.).	Man- holes (3).	Total.
Wormley & Bolden	\$1.45	\$23.50	\$824.50	\$1.70	\$30.00	\$1,212.00
E. G. Gummel .....	.88	26.00	535.00	1.00	27.00	741.00
James McCandlish	1.14	25.00	667.80	1.07	30.00	796.20
James Frawley				1.2375	24.00	888.75
John Jacoby	1.20	35.00	729.00	1.40	32.00	1,029.00

Name of bidder.	Sewer F.				
	30-inch (500 feet).	Manhole (1).	24-inch (360 feet).	Manholes (2).	Total.
Wormley & Bolden	\$2.50	\$30.00	\$2.15	\$30.00	\$2,114.00
E. G. Gummel	6.68	100.00	2.83	38.00	4,534.80
James McCandlish	4.95	256.00	1.77	33.00	3,434.20
John Jacoby	2.90	40.00	1.90	35.00	2,244.00

Name of bidder.	Sewer G.				
	24-inch (180 feet).	Manhole (1).	21-inch (720 feet).	Manholes (2).	Total.
Wormley & Bolden	\$2.12	\$32.00	\$2.09	\$32.00	\$1,982.40
Jno. P. Larguey	1.65	24.00	1.55	25.00	1,487.00
E. G. Gummel	1.41	25.00	1.32	26.00	1,281.20
Jas. McCandlish	1.67	23.00	1.47	25.00	1,432.00
Jas. Frawley	1.77	22.00	1.67	23.00	1,569.00
Jno. Jacoby	1.75	30.00	1.60	30.00	1,557.00
Cranford Paving Co.	1.458	21.00	1.418	23.19	1,370.00

Name of bidder.	Sewer H.			Sewer I.		
	12-inch (1,000 ft.).	Man- holes (6).	Total.	12-inch (210 ft.).	Manhole (0).	Total.
Wormley & Bolden	\$1.15	\$26.00	\$1,306.00	\$1.20	\$28.00	\$252.00
Jno. P. Larguey .....	.95	24.00	1,094.00	1.05	24.00	220.50
E. G. Gummel .....	.82	25.00	970.00	.80	25.00	168.00
Jas. McCandlish .....	.83	22.00	962.00	.85	25.00	178.50
Jas. Frawley	1.065	21.00	1,191.00	.99	21.00	207.90
Jno. Jacoby	1.00	30.00	1,180.00	1.00	30.00	210.00

276 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

Proposals for sewers, opened May 22, 1897.

Name of bidder.	Sewer J.		
	24-inch (550 ft.).	Man- holes (2).	Total.
Wormley & Bolden	\$1.80	\$24.00	\$1,038.00
Jno. P. Larguey	2.20	35.00	1,280.00
E. G. Gummel	2.10	36.00	1,227.00
Jas. McCandlish	1.97	45.00	1,175.50
Jno. Jacoby	2.20	40.00	1,290.00
Cranford Paving Co.	2.00	37.80	1,175.00

Name of bidder.	Sewer K.						Total.
	24-inch (590 ft.).	Man- holes (2).	21-inch (465 ft.).	Man- holes (2).	15-inch (425 ft.).	Man- holes (2).	
Wormley & Bolden	\$1.70	\$23.00	\$1.65	\$23.00	\$1.60	\$23.00	\$2,588.25
Jno. P. Larguey	1.65	25.00	1.45	25.00	1.10	25.00	2,265.25
E. G. Gummel	1.57	28.00	1.35	28.00	1.01	27.00	2,119.30
Jas. McCandlish	1.77	27.00	1.57	25.00	1.17	30.00	2,415.00
Jas. Frawley	1.665	22.00	1.46	22.00	1.27	22.00	2,333.00
Jno. Jacoby	1.90	31.00	1.70	34.00	1.30	34.00	2,608.00
Cranford Paving Co.	1.638	26.25	1.42	25.20	1.065	23.10	2,228.44

Name of bidder.	Sewer L.						Total.
	21-inch (380 ft.).	Man- holes (2).	18-inch (255 ft.).	Man- hole (1).	12-inch (160 ft.).	Man- hole (1).	
Wormley & Bolden	\$1.70	\$23.00	\$1.63	\$23.00	\$1.15	\$23.00	\$1,337.65
Jno. P. Larguey	1.50	25.00	1.60	30.00	1.10	25.00	1,250.00
E. G. Gummel	1.35	28.00	1.46	31.00	.87	27.00	1,138.50
Jas. McCandlish	1.40	25.00	1.37	31.00	.87	25.00	1,125.55
Jas. Frawley	1.465	22.00	1.49	24.00	.99	22.00	1,185.05
Jno. Jacoby	1.70	35.00	1.70	35.00	1.00	35.00	1,379.50
Cranford Paving Co.	1.42	25.20	1.48	31.50	1.03	25.20	1,188.90

Name of bidder.	Sewer M.		
	15-inch (310 feet).	Manholes (2).	Total.
Wormley & Bolden	\$1.60	\$23.00	\$542.00
Jno. P. Larguey	1.30	25.00	453.00
E. G. Gummel	1.12	28.00	463.20
Jas. McCandlish	1.40	30.00	491.00
Jno. Jacoby	1.50	35.00	535.00

Name of bidder.	Sewer N.						Total.
	18-inch (425 ft.).	Man- holes (2).	15-inch (320 ft.).	Man- hole (1).	12-inch (290 ft.).	Man- holes (4).	
Wormley & Bolden	\$1.90	\$29.00	\$1.87	\$29.00	\$1.84	\$29.00	\$3,056.50
Jno. P. Larguey	1.45	27.00	1.15	25.00	.95	25.00	1,873.75
E. G. Gummel	1.35	28.00	1.06	26.00	1.03	30.00	1,922.05
Jas. McCandlish	1.37	25.00	1.25	25.00	.95	27.00	1,835.75
Jno. Jacoby	1.75	34.00	1.50	34.00	.90	32.00	2,044.75

Name of bidder.	Sewer O.					Total.
	18-inch (57 ft.).	Man hole (1).	15-inch (510 ft.).	Man holes (3).		
Wormley & Bolden	\$1.90	\$23.00	\$1.87	\$23.00		\$1,154.00
Jno. P. Larguey	1.45	25.00	1.15	25.00		769.15
E. G. Gummel	1.08	26.00	.90	31.00		655.16
Jas. McCandlish	1.24	25.00	1.07	25.00		716.38
Jas. Frawley	1.265	21.00	1.195	21.00		765.55
Jno. Jacoby	1.60	35.00	1.35	35.00		919.70
Cranford Paving Co.	1.19	22.00	1.07	22.25		702.28

Proposals for sewers, opened May 22, 1897.

Name of bidder.	Sewer P.										Total.
	15-inch (55 feet).	Man- holes (2).	18-inch (150 feet).	Man- hole (1).	21-inch (575 feet).	Man- holes (4).	18-inch (485 feet).	Man- holes (3).	24-inch (935 feet).	Man- holes (5).	
Wormley & Bolden.....	\$1.65	\$25.00	\$1.70	\$25.00	\$1.75	\$25.00	\$1.70	\$25.00	\$1.90	\$25.00	\$4,323.00
John P. Larguey.....	1.15	25.00	1.50	25.00	1.70	25.00	1.50	25.00	2.15	30.00	4,403.50
E. G. Gummel.....	1.11	26.00	1.38	27.00	1.57	28.00	1.38	27.00	1.96	30.00	4,004.70
Jas. McCandlish.....	1.47	35.00	1.67	35.00	1.93	35.00	1.67	35.00	2.40	35.00	5,020.05
Jno. Jacoby.....	1.30	30.00	1.60	30.00	1.80	35.00	1.60	30.00	2.00	35.00	4,487.50

Name of bidder.	Sewer Q.			Sewer R.		
	15-inch (355 feet).	Man- holes (2).	Total.	18-inch (380 feet).	Man- holes (2).	Total.
Wormley & Bolden.....	\$1.95	\$29.00	\$750.25	\$2.00	\$29.00	\$818.00
E. G. Gummel.....	1.11	25.00	444.05	1.46	28.00	610.80
Jas. McCandlish.....	.99	25.00	401.45	1.47	30.00	618.60
Jno. Jacoby.....	1.50	30.00	592.50	1.80	35.00	754.00

Name of bidder.	Sewer S.			Sewer T.			
	21-inch (140 feet).	Man- hole (1).	Total.	21-inch (580 feet).	Man- holes (2).	24-inch (70 feet).	Man- hole (1).
Wormley & Bolden.....	\$2.00	\$29.00	\$309.00	\$2.00	\$29.00	\$2.10	\$29.00
E. G. Gummel.....	1.57	28.00	247.80	1.36	25.00	1.52	25.00
Jas. McCandlish.....	1.87	27.00	288.80	1.87	25.00	2.40	25.00
Jno. Jacoby.....	2.00	35.00	315.00	1.40	30.00	1.60	30.00

Name of bidder.	Sewer W.				Sewer V.		
	18-inch (260 ft.).	Man- hole (1).	21-inch (260 ft.).	Man- hole (1).	Total.	15-inch (300 ft.).	Man- hole (1).
Wormley & Bolden.....	\$2.00	\$29.00	\$2.05	\$29.00	\$1,111.00	\$1.30	\$23.00
John P. Larguey.....	1.75	30.00	2.20	36.00	1,033.00	1.25	25.00
E. G. Gummel.....	1.48	33.00	1.80	39.00	924.80	1.02	28.00
Jas. McCandlish.....	1.57	35.00	1.77	35.00	938.40	1.23	25.00
Jas. Frawley.....						1.23	22.00
Jno. Jacoby.....	2.00	40.00	1.90	35.00	1,089.00	1.60	35.00
Cranford Paving Co.....	1.539	33.60	1.80	38.22	939.96		

Name of bidder.	Sewer W.			Sewer X.		
	21-inch (640 ft.).	Manholes (2).	Total.	21-inch (375 ft.).	Manhole.	Total.
Wormley & Bolden.....	\$1.40	\$23.00	\$942.00	\$1.50	\$23.00	\$908.50
John P. Larguey.....	1.55	25.00	1,042.00	1.60	25.00	650.00
E. G. Gummel.....	1.34	28.00	913.60	1.40	28.00	581.00
Jas. McCandlish.....	1.67	25.00	1,118.80	1.72	30.00	705.00
Jas. Frawley.....	1.57	24.00	1,052.80	1.67	23.00	672.25
Jno. Jacoby.....	1.75	35.00	1,190.00	1.90	35.00	732.50
Cranford Paving Co.....	1.42	25.20	959.20	1.49	27.30	613.35

Proposals for construction of sewers, opened June 16, 1897. (Sewer F.)

Name of bidder	30-inch diameter. (500 feet).	Manhole (1).	24-inch diameter. (390 feet).	Manhole (2).	Total.
W. H. H. Allen.....	\$4.84	\$150.00	\$169.00	\$30.00	\$3,238.40
Jas. McCandlish.....	4.96	196.00	177.00	25.00	3,363.20

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Proposals for electric arc lighting, opened April 30, 1897.

Name of bidder.	West of Rock Creek.		East of Rock Creek.		Remarks.
	Existing lamps.	Additional lamps.	Existing lamps.	Additional lamps.	
Potomac Electric Power Co.	\$0.25	\$0.25	\$0.25	\$0.25	Price per lamp per night.
United States Electric Lighting Co.			91.25	91.25	Price per lamp per annum, equivalent to 25 cents per lamp per night.
Do.	25.00	20.00			Price per lamp per annum.
Do.			25.00		North side Pennsylvania avenue, between Madison place and Jefferson place, 4 lamps.
Do.			25.00		North side New York avenue, between Thirteenth and Fourteenth streets.
Do.			20.00		2 lamps at intersection of Thirteenth and H streets.
Do.			20.00		Other lamps along line of Potomac Electric Power Co.'s conduits, subject to use ducts of said company. (See item E, et seq., in letter.)

Proposals for street lighting, opened April 30, 1897.

Name of bidder.	Naphtha.		Gas, west of Rock Creek.		Gas, east of Rock Creek.		Incandescent.	
	1,000.	Each additional 1,000.	400.	Each additional 400.	4,000.	Each additional 4,000.	50.	Each additional 50.
Washington Lighting Co. <i>a</i>	\$15.80	\$15.80						
Pennsylvania Globe Gaslight Co. <i>b</i>	20.00	20.00						
Do. <i>c</i>	30.00	30.00						
Georgetown Gaslight Co.			\$20.00	\$20.00				
Washington Gaslight Co.					\$20.00	\$20.00		
Potomac Electric Power Co.							\$20.00	\$20.00

a Using Schauer burner, 15-candlepower.*b* Using Wellington plate burner, 20-candlepower.*c* Using Welsbach burner, 60-candlepower.*Schedule of proposals for lamp-posts, opened April 7, 1897.*

Name of bidder.	100 lamp-posts.
R. H. Hood, Washington, D. C.	\$6.97
M. J. Drummond, New York, N. Y.	6.20
Camden Iron Works, Philadelphia, Pa.	4.95
Chamblin & Scott, Richmond, Va.	6.20
Midvale Foundry Co., Allentown, Pa.	4.94
Charles White & Co., Washington, D. C.	8.45
George White's Sons, Washington, D. C.	5.60

Proposals for furnishing terra-cotta sewer pipe, vitrified invert blocks, and vitrified invert bricks, opened August 15, 1896.

Name and address of bidder.	Terra-cotta sewer pipe (per linear foot).							
	6-inch (1,800 feet).	8-inch (2,400 feet).	10-inch (3,000 feet).	12-inch (3,600 feet).	15-inch (4,500 feet).	18-inch (5,400 feet).	21-inch (6,300 feet).	24-inch (7,200 feet).
Potomac Terra Cotta Co., Washington, D. C. <i>a</i>	\$0.06	\$0.08	\$0.11	\$0.13	\$0.19	\$0.26	\$0.38	\$0.50
T. Somerville & Sons, Washington, D. C. <i>b</i>.....	.05	.07	.12	b.12½	b.18½	b.25½	b.37½	.49
Angus Lamond, Takoma, D. C.....	a.05	.07½	.14	.14	.19	.26	a.35	.50
Robinson Bros. & Co., Akron, Ohio.....	.04½	.07	a.10	.13	.19	.26	a.35	.50
National Sewer Pipe Co., Barberton, Ohio.....	.05½	.08½	.13	.16½	.24	.33½	.50	.64½
John Robrecht et al., Wheeling, W. Va.....	.05½	.07½	.....	.....	.....	.....	.....	.....

Name and address of bidder.	Terra-cotta Y branches (each).							Vitrified invert blocks (7,500) per linear foot.	Vitrified invert bricks (500,000) per M.
	8 by 6 inches (125).	10 by 6 inches (200).	12 by 6 inches (320).	15 by 6 inches (500).	18 by 6 inches (800).	21 by 6 inches (1,125).	24 by 6 inches (1,500).		
Potomac Terra Cotta Co., Washington, D. C. <i>a</i>	\$0.32	\$0.45	a \$0.58	a \$0.85	a \$1.15	a \$1.70	\$2.20	\$0.20	.....
T. Somerville & Sons, Washington, D. C. <i>b</i>.....	.31	.....	.....	.....	.....	.....	.....	.17	.....
Angus Lamond, Takoma, D. C.....	.30	.....	.....	.....	.....	.....	.....	a.15	a \$0.39½
Savage Fire Brick Co., Keystone Junction, Pa. <i>a</i>.....	.....	.....	.....	.....	.....	.....	.....	.....	\$16.20
Do.....	.....	.....	.....	.....	.....	.....	.....	.....	15.90
Do.....	.....	.....	.....	.....	.....	.....	.....	.....	a 15.50
Robinson Bros. & Co., Akron, Ohio.....	a.30	.45	.60	.87	1.18	a.55	2.26	.17	.43
McMahan, Porter & Co., New Cumberland, W. Va.....	.....	.....	.....	.....	.....	.....	.....	.50	15.56
A. Yates, Johnsonburg, Pa.....	.....	.....	.....	.....	.....	.....	.....	.....	c 8.00
National Sewer Pipe Co., Barberton, Ohio.....	.34½	.58	.75	1.10	1.50	2.20	3.00	.21	.....
John Robrecht et al., Wheeling, W. Va.....	.26½	.....	.....	.....	.....	.....	.....	.....	16.50
J. A. Haydon & Co., Frederick, Md.....	.....	.....	.....	.....	.....	.....	.....	.....	d 17.00

NOTE.—The items awarded to Robinson Bros. & Co. were refused by them and reawarded as follows: To Potomac Terra Cotta Company, items 1, 2, part of 3, and 4; to T. Somerville & Sons, part of item 3.

a Bid accepted.

b Bid accepted for 8,000 feet of 12-inch, 4,000 feet of 15-inch, 2,000 feet of 18-inch, and 2,000 feet of 24-inch.

c Informal. No deposit.

d To be delivered in such quantities as designated.

Proposals for furnishing terra-cotta sewer pipe, vitrified invert block, and vitrified invert brick, opened May 29, 1897.

Name of bidder.	Terra-cotta sewer pipe (per foot).							
	24-inch (2,000 feet).		21-inch (21,000 feet).		18-inch (18,000 feet).		15-inch (20,100 feet).	
	Quantity.	Price.	Quantity.	Price.	Quantity.	Price.	Quantity.	Price.
Mack Manufacturing Co.....	.....	\$0.48	.....	\$0.34½	.....	\$0.25½	.....	\$0.18½
Central Sewer Pipe Co.....	.....	.49	.....	.38	.....	.25½	.....	.19
Potomac Terra Cotta Co.....	2,000	.50	1,000	.35	.....	.24½	.....	.18
Somerville & Sons.....	5,000	.49	4,000	.35	8,000	.24	10,000	.17
John Robrecht.....	.....	.56	.....	.43	.....	.28½	.....	.22½
Robinson Bros. & Co.....	.....	.55	.....	.46	.....	.29	.....	.21

NOTE.—Bids include entire amount except where otherwise specified.

Proposals for furnishing terra-cotta sewer pipe, vitrified invert block, and vitrified invert brick, opened May 29, 1897—Continued.

Name of bidder.	Terra-cotta sewer pipe (per foot).					
	12-inch (45,000 feet).		10-inch (13,200 feet).		8-inch (2,400 feet).	
	Quantity.	Price.	Price.	Price.	Quantity.	Price.
Mack Manufacturing Co.		\$0.128	\$0.069	\$0.069		\$0.044
Angus Lamond.	10,000	.13		.07½	1,800	.05
Central Sewer Pipe Co. ....		.13	.10	.07		.05
Potomac Terra Cotta Co. ....		.12	.11	.07		.05
Somerville & Sons.	10,000	.11½		.06½		.041
John Robrecht. ....		.15	.12	.08½		.05½
Robinson Bros. & Co. ....		.14	.12½	.07		.05

Name of bidder.	Terra-cotta Y-branches (each).							
	24 by 6 inches (25).		21 by 6 inches (60).		18 by 6 inches (100).		15 by 6 inches (200).	
	Price.	Price.	Quantity.	Price.	Quantity.	Price.	Quantity.	Price.
Mack Manufacturing Co.	\$1.823	\$1.50		\$0.993		\$0.743		\$0.527
Central Sewer Pipe Co.	2.19	1.68		1.15		.85		.58
Potomac Terra Cotta Co.	2.25	1.75		1.15		.85		.60
Somerville & Sons.	2.19	1.68	100	1.12	200	.83	300	.56
John Robrecht.	2.50	1.93		1.31		.96		.65½
Robinson Bros. & Co.	2.40	2.10		1.30		.95		.65

Name of bidder.	Terra-cotta Y-branches (each).			Bends, 6-inch (600).	Vitrified invert			
	10 by 6 inches (600).		8 by 6 inches (125).		Blocks (6,600).		Brick (540,000).	
	Price.	Price.	Price.		Quantity.	Price.	Quantity.	Price.
Frederick Brick Works.							250,000	a \$11.00
Clearfield Clay Working Co.								
Toronto Fire Clay Co.							540,000	b 13.00
Savage Fire Brick Co.							540,000	c 15.85
J. A. Hayden.							540,000	d 15.50
Mack Manufacturing Co.	\$0.4242	\$0.2798	\$0.134		6,600	\$0.38	540,000	f 14.00
Angus Lamond. ....		.30	.15		6,600	.39½		
Central Sewer Pipe Co. ....	.44	.30	.16					
Potomac Terra Cotta Co. ....	.50	.30	.16					
Somerville & Sons. ....		.29	.14					
McMahan Porter & Co. g.					6,000	.45	540,000	h 14.50
John Robrecht. ....	.49½	.35	.19½		6,600	.08½		
Robinson Bros. & Co. ....	.49	.34	.18					

NOTE.—Bids include entire amount except where otherwise specified.

a Number of brick to square yard, 68.3; cost per square yard, 75.13 cents.

b Number of brick to square yard, 59; cost per square yard, 76.7 cents.

c Number of brick to square yard, 61.3; cost per square yard, 96.76 cents.

d Number of brick to square yard, 57.6; cost per square yard, 89.28 cents.

e Vitrified wire blocks, 9 by 4 by 3 inches, at 18.83 cents per sample; brick, 57.1: re-pressed, 14.50 cents. No sample blocks submitted. (See letter; see note.)

f Mack's brick: Standard, 61.8 to square yard; cost per square yard, 86.52 cents; re-pressed, 66.7 to square yard; cost per square yard, 95.71 cents.

g No sample block submitted equal to that heretofore supplied.

h McMahan Porter's brick, 58.1 to square yard; cost per square yard, 84.24 cents.

Proposals for furnishing vitrified paving blocks, opened September 10, 1896.

Name and address of bidder.	Number of blocks, ordinary.	Number of blocks to yard on edge (average).	Price per M.	Deliveries to commence—
Clearfield Clay Working Co., Clearfield, Pa.	900,000	59	\$14.75	Dec. 1, 1896
J. L. Higley & Co., Canton, Ohio.	900,000	43	23.00	Oct. 1, 1896
McMahan, Porter & Co., New Cumberland, W. Va. <i>a</i> {	900,000	43	20.45	} Within 30 days.
John M. Mack, Philadelphia, Pa. <i>a</i> {	900,000	57	15.80	
	Entire order.	40	21.25	Oct. 1, 1896
Virginia Paving Brick Co., Lynchburg, Va.	500,000	49	19.50	When ordered.
New England Steam Brick Co., Providence, R. I. ...	200,000	70	15.00	Immediately.

Name and address of bidder.	To be prosecuted at rate of (per month)—	To be completed on or before—	Price to apply to smaller number, not less than—
Clearfield Clay Working Co., Clearfield, Pa.	300,000	Apr. 1, 1897	300,000
J. L. Higley & Co., Canton, Ohio.	3 to 5 cars per day.	Nov. 15, 1896	200,000
McMahan, Porter & Co., New Cumberland, W. Va. <i>a</i>	(10,000 per day	Feb. 1, 1897	300,000
	(15,000 per day	do	500,000
John M. Mack, Philadelphia, Pa. <i>a</i>	300,000	Jan. 1, 1896	Any quantity.
Virginia Paving Brick Co., Lynchburg, Va.	15,000 per day		200,000
New England Steam Brick Co., Providence, R. I. ...		Oct. 15, 1896	100,000

Name and address of bidder.	Number of blocks (repressed).	Number of blocks to yard on edge (average).	Price per M.	Deliveries to commence—
Clearfield Clay Working Co., Clearfield, Pa.	900,000	58	\$15.00	Dec. 1, 1896
J. L. Higley & Co., Canton, Ohio.	900,000	43	24.00	Oct. 1, 1896
Savage Fire Brick Co., Keystone Junction, Pa. <i>a</i> ...	1,000,000	48	20.00	30 days after order.
McMahan, Porter & Co., New Cumberland, W. Va. <i>a</i> {	900,000	43	20.85	} Within 30 days.
John M. Mack, Philadelphia, Pa. <i>a</i> {	900,000	55	16.80	
	Entire order.	43	21.75	At once.
Virginia Paving Brick Co., Lynchburg, Va.	500,000	49	19.50	do
New England Steam Brick Co., Providence, R. I. ...				

Name and address of bidder.	To be prosecuted at rate of (per month)—	To be completed on or before—	Price to apply to smaller number, not less than—
Clearfield Clay Working Co., Clearfield, Pa.	200,000 to 400,000	Apr. 1, 1897	300,000
J. L. Higley & Co., Canton, Ohio.	3 to 5 cars per day.	Nov. 15, 1896	200,000
Savage Fire Brick Co., Keystone Junction, Pa. <i>a</i> ...	250,000	Mar. 1, 1897	250,000
McMahan, Porter & Co., New Cumberland, W. Va. <i>a</i>	(10,000 per day	Feb. 1, 1897	300,000
	(15,000 per day	do	500,000
John M. Mack, Philadelphia, Pa. <i>a</i>	300,000	Jan. 1, 1896	Any quantity.
Virginia Paving Brick Co., Lynchburg, Va.	15,000 per day	Within 60 days.	100,000
New England Steam Brick Co., Providence, R. I. ...			

a Bids accepted for 300,000 blocks each.

b Paving brick.

Proposals for furnishing vitrified paving blocks or bricks, opened May 29, 1897.

Name of bidder.	Number to square yard.	Vitrified paving blocks.					Bid applies to order for not less than—
		Ordinary price.	Cost, square yard.	Number to square yard.	Re-pressed price.	Cost, square yard.	
Clearfield Clay Working Co. <i>a</i>	50	\$15.00	\$0.75	50	\$15.60	\$0.78	500,000
McMahan, Porter & Co.	42	19.00	.798	42½	20.00	.85333	(<i>b</i>)
John M. Mack <i>c</i>	40	19.00	.781	43	20.00	.86	.....
Savage Fire Brick Co.				48	20.00	.96	400,000
J. A. Hayden	48	18.83	.90384	.....	.....	.....	.....
Camden Clay Co.				46	18.60	.8556	5,000
Virginia Paving Brick Co. <i>d</i>	54	15.50	.837	54	15.50	.837	.....

Name of bidder.	Number to square yard.	Vitrified paving bricks.					Bid applies to order for not less than—
		Ordinary price.	Cost, square yard.	Number to square yard.	Re-pressed price.	Cost, square yard.	
Clearfield Clay Working Co. <i>a</i>	58	\$13.00	\$0.754	58	\$13.50	\$0.783	800,000
McMahan, Porter & Co.	55½	14.50	.807157	56	15.60	.8736	(<i>b</i>)
John M. Mack <i>c</i>	58	14.00	.812	60	14.50	.87	.....
Savage Fire Brick Co.				56	16.25	.91	400,000
J. A. Hayden	57½	16.13	.920088	.....	.....	.....	.....
Toronto Fire Clay Co.	60	15.85	.951	.....	.....	.....	10,000
Thompson C. Gill & Co.	60	18.74	1.1244	.....	.....	.....	100,000
Francis & Rouch <i>e</i>				60	15.44	.9264	100,000
John Rabrecht <i>f</i>	59	15.50	.9145	.....	.....	.....	.....

a Either fire clay or shale.*d* 500,000 only.*b* Any quantity.*e* 1,000,000 only.*c* Full contract only; commence in ten days.*f* Bid informal; received May 29, 5 p. m.*Proposals for furnishing terra-cotta pipe, opened March 13, 1897.*

Name and address of bidder.	At District property yard.				At Takoma, D. C.			
	12-inch.	18-inch.	21-inch.	24-inch.	12-inch.	18-inch.	21-inch.	24-inch.
Thomas Somerville & Sons, Wash- ington, D. C.	<i>Cents.</i> 14	<i>Cents.</i> 28	<i>Cents.</i> 48	<i>Cents.</i> 56½	<i>Cents.</i> 14	<i>Cents.</i> 28	<i>Cents.</i> 48	<i>Cents.</i> 56½
Potomac Terra-Cotta Co., Wash- ington, D. C.	14½	29	50	58	14½	29	50	58
Angus Lamond, Takoma, D. C. <i>a</i> ..	13½	.....	.....	.....	13½	.....	.....	.....

a Check not certified; bid protested by Somerville & Sons.*Proposals for furnishing sand and pebbles, opened July 6, 1896.*

Name and address of bidder.	Paving and concrete sand (8,000 cubic yards), per cubic yard.	Building sand (500 cubic yards), per cubic yard.	Screened pebbles (4,500 cubic yards), per cubic yard.
	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
John B. Lord, Washington, D. C.	<i>a</i> 45	70	65
Columbia National Land Dredging Co., Washington, D. C.	55	<i>a</i> 65	<i>a</i> 59
W. A. Richards, Washington, D. C.	47	59	69

a Bid accepted.

Proposals for furnishing cement, opened July 18, 1896.

Name and address of bidder.	Number of barrels.	Natural hydraulic cement (price per barrel).					Portland cement, at District cement house (price per barrel).
		At District cement house.			At bidder's warehouse.		
		In barrels.	In canvas bags.	In paper bags.	In barrels.	In canvas bags.	
James H. McGill, Washington, D. C. <i>a</i>	{10,000 to 16,000}	\$1.06	\$0.86	-----	<i>b</i> \$1.00	\$0.80	<i>a</i> \$2.09
Atlas Cement Co., New York City	-----	-----	-----	-----	-----	-----	2.11½
Lawrenceville Cement Co., New York City <i>a</i>	27,000	.91	.71	\$0.75½	-----	-----	<i>c</i> 2.41
E. Thiele, New York City	-----	-----	-----	-----	-----	-----	-----
Coplay Cement Co., Allentown, Pa.	27,000	1.40	1.50	1.27½	-----	-----	2.65
Grove Lime and Coal Co., Washington, D. C.	27,000	.97½	.72½	-----	<i>d</i> .98½	.73½	2.35
J. G. & J. M. Waters, Washington, D. C.	15,000	1.06½	.86½	-----	<i>e</i> .99½	.79½	-----

a Bid accepted.*b* Bidders' warehouse, Third and R streets NE. and Baltimore and Ohio Railroad.*c* Bidders' warehouse, Twenty-sixth and D streets NW.*d* Bidders' warehouse, North Capitol and E streets NE.*e* Bidders' warehouse, 1045 Thirty-second street NW.*Schedule of proposals for furnishing paving bricks, opened August 15, 1896.*

[Prices per 1,000.]

Name and address of bidder.	Quantities.	Average number per square yard.	Delivery per month.	In city and county of Washington, upon or south of Florida and Bennings road, and between Eastern Branch and Rock Creek.	In city of Georgetown.
John Miller, Washington, D. C. <i>a</i>	800,000	Sample.	400,000	a \$9.00	a \$9.00
Charles Ford, Washington, D. C. <i>a</i>	400,000	36	100,000	a 8.00	a 8.50
The Frederick Brick Works, Frederick, Md.	500,000	-----	(b) 20,000	-----	-----
Francis & Rauch, Pinegrove, Pa.	200,000	40½	-----	-----	-----

Name and address of bidder.	In county of Washington, east of Eastern Branch.	In county of Washington, between Eastern Branch and Rock Creek, and not over 2 miles from Florida avenue.	In county of Washington, west of Rock Creek, within one mile of Georgetown.	At bidder's works.	At District property yards.
John Miller, Washington, D. C. <i>a</i>	a \$9.00	a \$9.50	a \$9.50	\$7.50	a \$7.75
Charles Ford, Washington, D. C. <i>a</i>	a 8.50	a 9.00	a 9.50	7.00	8.00
Francis & Rauch, Pinegrove, Pa.	-----	-----	-----	-----	17.50

a Bid accepted for 400,000.*b* 25,000 first four months, 50,000 thereafter.

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Proposals for furnishing bricks, opened May 29, 1897.

[Price per 1000.]

SIDEWALK PAVING BRICKS.

Name of bidder.	City.	Georgetown.	County east of Eastern Branch.	County, between Eastern Branch and Rock Creek.	County west of Rock Creek and 1 mile of G street.	District property yard.	Bidder's works.	Hauling beyond limits mentioned.
John Miller	\$9.00	\$9.50	\$9.50	\$9.50	\$9.50	\$8.25	\$7.75	\$0.50
Doa	8.00	8.50	8.50	8.50	8.50	7.25	6.75	.50
Washington Brick Co	8.93	9.23		9.23				
Frederick Brick Works						8.90		
Charles Ford b	8.00	9.00	9.00	10.00	10.50	7.75	7.25	

SEWER BRICKS.

Name of bidder.	City.	Georgetown.	County east of Eastern Branch.	County, between Eastern Branch and Rock Creek.	County west of Rock Creek and 1 mile of G street.	District property yard.	Bidder's works.	Hauling beyond limits mentioned.
John Miller	\$8.00	\$8.00	\$8.00	\$8.00	\$8.00	\$6.75	\$6.00	\$0.50
Washington Brick Co	6.93	7.23		7.23				
Frederick Brick Works						7.50		

a Will accept contract for part.*b* 600,000 only.*Proposals for furnishing sewer bricks, opened July 6, 1896.*

[Price per 1,000.]

Name and address of bidder.	In city and county of Washington, south of Florida avenue and Benning road and between Eastern Branch and Rock Creek.	In city of Georgetown.	In county of Washington, east of Eastern Branch.	In county of Washington, between Eastern Branch and Rock Creek, not over 1½ miles from Florida avenue.	In county of Washington, west of Rock Creek within 1 mile of Georgetown.	At bidder's works.	At District property yards.	For each additional mile beyond limits mentioned.
A. Richards Brick Co., Washington, D. C.	\$7.50	\$8.00	\$8.00	\$8.20	\$8.60	\$0.50		\$0.35
W. H. West & Bro., Washington, D. C.	7.48	7.73	7.98	8.23	8.33	6.13	\$7.48	.75
John Miller, Washington, D. C. a	7.29	7.50	8.00	8.00	9.00	5.90	6.40	.50

a Bid accepted.*Proposal for furnishing asphalt paving blocks, opened September 8, 1896.*

[Price per 1,000.]

Name and address of bidder. a	In city of Washington.	In city of Georgetown and county of Washington.	At District property yard.
Washington Asphalt Block and Tile Co., Washington, D. C. ..	\$55	\$57	\$53

a Bid accepted.

Proposals for furnishing fire and street hydrants, opened December 10, 1896.

Name and address of bidder.	100 fire hydrants (each).	50 street hydrants (each).
Raymond & Campbell Manufacturing Co., Middletown, Pa.	\$54.50	-----
M. J. Drummond, New York City <i>a</i>	35.50	\$11.60
Lowell Valve Manufacturing Co., Troy, N. Y.	-----	11.60
Norwood Engineering Co., Florence, Mass.	48.16	16.17

a Bid accepted.

Proposals for furnishing granite curbing, opened July 6, 1896.

Name and address of bidder.	Standard.			
	Straight (per linear foot).	Circular (per linear foot).	Delivery to commence within—	To be prosecuted at the rate of (per month)—
			<i>Days.</i>	
Asa B. Cook, Petersburg, Va.	\$0.82	\$0.97	30	(<i>a</i>)
J. Merrick Horn, Wilmington, Del. ....	.67	.82	60	3,400
Jno. Maxwell's Sons, Philadelphia, Pa. <i>b</i> .....	.69	.79	45	5,000
Mount Waldo Granite Works, Frankfort, Me. ....	.74	1.00	40	3,000
Dunbar Bros., Sullivan, Me. ....	.70	.93	40	4,000
Wm. F. Weller, Granite, Md. ....	.70	1.05	10	2,000
	.72	1.07		
	.73	1.09		
Francis Jones & Co., Lithonia, Ga. ....	.70½	1.02½	15	3,000
Chas. S. Ferguson, New York City .....	.71	1.06	35	5,000
Brandywine Granite Co., Wilmington, Del. ....	.82	1.09	20	1,500
W. B. Blaisdell, Franklin, Me. ....	.70	.85	60	(<i>c</i>)
Chatto & Condon, South Brooksville, Me. <i>d</i>	<i>e</i> .53	<i>e</i> .82	40	2,000
South Carolina Granite Co., Winnsboro, S. C. ....	.75	1.10	30	5,000
Mount Airy Granite Co., Greensboro, N. C. ....	.69	1.04	30	5,000
McCauless Bros., Salisbury, N. C. ....	.77	1.10	20	2,000
Name and address of bidder.	Special.			
	Straight 8-inch (per linear foot).	Circular 8-inch (per linear foot).	Delivery to commence within—	To be prosecuted at the rate of (per month)—
			<i>Days.</i>	
Asa B. Cook, Petersburg, Va.	\$0.67	\$0.82	30	(<i>f</i>)
J. Merrick Horn, Wilmington, Del.	<i>g</i> .52½	<i>c</i> .67½	60	2,500
Jno. Maxwell's Sons, Philadelphia, Pa. <i>b</i> .....	.67	.79	45	3,000
Mount Waldo Granite Works, Frankfort, Me. ....	.65	.90	40	2,500
Dunbar Bros., Sullivan, Me. ....	.60	.80	40	4,000
Wm. F. Weller, Granite, Md. ....	.64½	.85	10	2,000
	.66½	.82	15	2,500
	.67½			
	.62½			
Francis Jones & Co., Lithonia, Ga. ....	.62	.91½	35	5,000
Chas. S. Ferguson, New York City .....	.72	.94	20	1,500
Brandywine Granite Co., Wilmington, Del. ....	.55	.96	60	(<i>c</i>)
W. B. Blaisdell, Franklin, Me. ....	.61	.70	60	2,000
Chatto & Condon, South Brooksville, Me. <i>d</i> .....	.61	.82	40	5,000
South Carolina Granite Co., Winnsboro, S. C. ....	.75	1.10	30	5,000
Mount Airy Granite Co., Greensboro, N. C. ....	.63½	.95½	20	1,500
McCauless Bros., Salisbury, N. C. ....	.65			

a 1,000 feet first two months, 2,000 feet thereafter.

b Bid based on contract being awarded as a whole.

c Complete in 5 months.

d Ship one-half this fall; balance in spring of 1897.

e Bid accepted, but contract refused; readvertised.

f 1,000 feet first two months, 1,500 feet thereafter.

g Bid accepted.

Proposals for furnishing fire and street hydrants, etc.—Continued.

Name and address of bidder.	Special.					Quantity to be furnished, linear feet.					
	Straight, 6-inch (per linear foot).	Circular, 6-inch (per linear foot).	Delivery to commence with in	Total to be prosecuted at the rate of (per month)—	Days.	Straight, stand-ard.	Circular, stand-ard.	Straight, 8-inch.	Circular, 8-inch.	Straight, 6-inch.	Circular, 6-inch.
Asa B. Cook, Petersburg, Va.	\$0.60	\$0.75	30	(a)	17,000	(b)	14,000	(b)	14,000	(b)	
J. Merriek Horn, Wilmington, Del.	c. 50	c. 65	60	2,800	17,000	850	14,000	700	14,000	700	
Jno. Maxwell's Sons, Philadelphia, Pa. d	.63	.73	45	(d)	17,000	(d)	14,000	(d)	14,000	(d)	
Mount Waldo Granite Works, Frankfort, Me.	.59	.80	40	2,500	10,000	(d)	5,000	(d)	5,000	(d)	
Dunbar Bros., Sullivan, Me.	.59	.79	40	4,000	17,000	850	14,000	700	14,000	700	
Wm. F. Weller, Granite, Md.	.53	.70	10	2,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	.54	.72		or	1,000	1,000	1,000	1,000	1,000	1,000	1,000
	.56	.74		more	2,000	1,000	2,000	1,000	1,000	1,000	1,000
Francis Jones & Co., Lithonia, Ga.	.60	.89	15	2,500	17,000	1,000	14,000	700	14,000	700	
Chas. S. Ferguson, New York City	.61	.92	35	5,000	17,000	850	14,000	700	14,000	700	
Brandywine Granite Co., Wilmington, Del.	.72	.96	20	1,500	17,000	850	14,000	700	14,000	700	
W. B. Blaisdell, Franklin, Me.	.50	.60	60	(c)	17,000	850	14,000	700	(d)	(d)	
Chatto & Condon, South Brooksville, Me. f	.59	.82	60	2,000	13,200	700	16,150	850	16,150	850	
South Carolina Granite Co., Winnsboro, S. C.	.65	1.00	40	5,000	17,000		14,000				
Mount Airy Granite Co., Greensboro, N. C.	.53	.80	30	5,000	17,000	(d)	14,000	(d)	14,000	(d)	
McCauless Bros., Salisbury, N. C.	.55	.70	20	(d)	17,000	(d)	14,000	(d)	(d)	(d)	

a 1,000 feet first two months. 1,500 feet thereafter.

b Proportional amount.

c Bid accepted.

d As required.

e Complete in five months.

f Ship one-half this fall; balance in spring of 1897.

Proposals for furnishing standard granite curbing, opened August 18, 1896.

Name and address of bidder.	Straight.		Circular.		Deliv-ery to be com-menced with- in—	Delivery to be pro-se-cuted at rate of (per month)—
	Quantity.	Price.	Quantity.	Price.		
Dunbar Bros., Sullivan, Me. a	16,000	\$0.65	1,000	\$0.82	Days.	Feet.
Mt. Airy Granite Co., Greensboro, N. C.	8,500	.68	(b)	.82	40	4,000
Francis Jones & Co., Atlanta, Ga.	8,500	.65			82	2,500
A. B. Cook, Petersburg, Va.	16,150	.66	850	.87	15	6,000
John Maxwell's Sons, Philadelphia, Pa.	17,000	.80	850	.96	30	2,000
Chas. S. Ferguson, New York City	17,000	.68		.74	45	3,000
J. Merriek Horn, Wilmington, Del.	17,000	.70	4,500	1.05	60	4,000
Geo. Peirce, Frankfort, Me. c	17,000	.67	850	.82	60	3,400
	5,000	.70				
	5,000	.67	1,000	1.19	60	(d)

a Bid accepted. b Amount required. c 1,200 to 1,500 feet 5 by 20 curb at once. d In 60 days.

Proposals for furnishing granite curbing, opened February 15, 1897.

Name and address of bidder.	Straight standard (5,300 linear feet).			Straight 8-inch special (6,500 linear feet).		
	Per linear foot.	Delivery to commence within—	To be prosecuted at rate of (per month)—	Per linear foot.	Delivery to commence within—	To be prosecuted at rate of (per month)—
		<i>Days.</i>	<i>Feet.</i>		<i>Days.</i>	<i>Feet.</i>
McCaless Bros., Salisbury, N. C.	\$0.72	20	1,000	\$0.57	20	1,000
New Brunswick Red Granite Co., Calais, Me. <i>a</i>	1.16	30	2,400	.99	30	2,400
S. C. Doby, Lithonia, Ga.	.66	15	b 1,000	.55	15	(c)
W. L. Kluttz, Salisbury, N. C.	.74	20	b 500	.65	20	b 500
J. F. Manning & Co., Washington, D. C.	.86	30	(d)	.76	30	b 1,000
John P. Gordon, Franklin, Me.	e .645	90	3,000	.545	90	3,000
Dunbar Bros., Sullivan, Me.	.72	120	1,800	.595	120	2,200
Brandywine Granite Co., Wilmington, Del.	.75	30	1,500	.60	30	3,000
Hooper, Hovey & Co., Sullivan, Me.	.68	90	2,000	.53	90	2,000
Geo. Peirce, Frankfort, Me.	.73	70	2,500	.59	70	3,000
Mount Airy Granite Co., Greensboro, N. C.	.68	15	3,000	.62	15	3,000
Connecticut State Granite Co., New York City <i>a</i>	.64	30	(d)	.52	-----	-----
E. D. Jenkins, Lithonia, Ga.	.675	15	f 206	.63	15	f 200
A. B. Cook, Petersburg, Va.	g .78	30	1,325	g .66	30	1,525
J. Merrick Horn, Wilmington, Del.	.67	(h)	-----	e .515	(i)	-----
Francis Jones, Atlanta, Ga.	.675	20	2,700	.57½	20	2,500

a Informal; no check or deposit.

b Per week.

c 500 to 1,000 per week.

d As required.

e Bid accepted.

f Per day.

g 73 cents and 63 cents if awarded whole.

h Complete by June 20, 1897.

i Complete by May 20, 1897.

Proposals for furnishing granite curbing, opened May 29, 1897.

Name of bidder.	Quantity.	6 by 20 inch curbing.		Delivery to commence—	Rate of prosecution.
		Straight.	Circular.		
	<i>Feet.</i>			<i>Days.</i>	
S. C. Doby <i>a</i>	38,000	\$0.58½	\$0.72½	20	8,000 to 10,000 feet per month.
John P. Gordon	15,000	.65½	.82	60	3,000 feet per month.
Brandywine Granite Co.	38,000	.72	-----	20	2,000 feet per month.
G. W. Walker	38,000	.61	.90	35	2,500 feet per month.
Francis Jones	36,100	.62½	.72½	15	5,000 feet per month.
Dunbar Bros. <i>b</i>	38,000	.72	.82	60	3,000 feet per month.
A. B. Cook	10,000	.66	.92	30	10 per cent per month.
Do	15,000	.69	-----	30	Do.
Do	20,000	.72	-----	30	Do.
Mount Airy Granite Co.	19,000	.59	.76	30	4,000 feet per month.
Do	19,000	.61½	-----	30	Do.
J. Merrick Horn	10,000	.64	.87	30	Sept. 1, 1897.
Do	10,000	.65	-----	30	Nov. 1, 1897.
Do	18,000	.67	-----	30	May 20, 1898.
George Pierce	5,000	.69	1.12	60	5,000 feet per month.
Do	33,000	.95	-----	60	Do.
Shipping, Kluttz & Co.	-----	-----	-----	-----	-----

a Bid reduced from 61 to 58½ cents by telegraph.

b Will furnish 6,000 feet per month of sizes ordered. Bid for 8 inches is predicated upon acceptance of bid for 6 inches.

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Proposals for furnishing granite curbing, opened May 29, 1897—Continued.

Name of bidder.	Quantity.	8 by 8-inch curbing.		Delivery to commence—	Rate of prosecution.
		Straight.	Circular.		
	<i>Feet.</i>			<i>Days.</i>	
S. C. Doby <i>a</i>	30,000	\$0.47½	\$0.58	20	8,000 to 10,000 feet per month.
John P. Gordon.....	15,000	.51	.64	60	3,000 feet per month.
Brandywine Granite Co.....	30,000	.55	.....	20	2,500 feet per month.
G. W. Walker.....	30,000	.48½	.80	40	Do.
Francis Jones.....	28,500	.49½	.62½	15	4,000 feet per month.
Dunbar Bros. <i>b</i>	30,000	.60	.78	60	3,000 feet per month.
A. B. Cook.....	5,000	.56	.72	30	10 per cent per month.
Do.....	8,000	.58	.....	30	Do.
Do.....	10,000	.60	.....	30	Do.
Mount Airy Granite Co.....	15,000	.51	.73	30	4,000 feet per month.
Do.....	15,000	.54	.....	30	Do.
J. Merrick Horn.....	30,000	.52½	.67½	30	7,500 feet Sept. 1, 1897.
Do.....					7,500 feet Nov. 1, 1897.
Do.....					15,000 feet May 20, 1898.
George Pierce.....	30,000	.....	.95	60	5,000 feet per month.
Do.....	30,000	.73	.62	30	2,500 feet per month.
Shuping, Klutz & Co.....					

a Bid reduced from 61 to 58½ cents by telegraph.

b Will furnish 6,000 feet per month of sizes ordered. Bid for 8 inches is predicated upon acceptance of bid for 6 inches.

Schedule of bids opened June 17, 1897, for hauling cast-iron water pipe, etc., for fiscal year ending June 30, 1898.

[Price per ton of 2,240 pounds.]

Name of bidder.	Inside of boundary line Washington and Georgetown.		Outside of boundary line Washington and Georgetown.	
	<i>Cents.</i>		<i>Cents.</i>	
Frederick Springmann.....	56		60	
Littlefield, Alvord & Co.....	54		68	
Merchants Parcel Delivery Co. (Newbold & Co.).....	56		67.5	
The Geo. W. Knox Express Co. <i>a</i>	58		68	

a No deposit.

Proposals for constructing culvert on Illinois avenue, opened April 1, 1897.

Name of bidder.	Rubble masonry (150 cubic yards).		Brick arch masonry (30 cubic yards).		Total cost.
	Price.	Cost.	Price.	Cost.	
A. D. Shaw.....	\$5.50	\$825.00	\$6.66	\$199.80	\$1,024.80
N. Van Nostrand.....	6.00	900.00	11.00	330.00	1,230.00
J. A. Coyle.....	5.70	855.00	10.50	315.00	1,170.00
Andrew Gleeson.....	5.90	885.00	9.75	292.50	1,177.50
Jos. Robson.....	5.35	802.50	7.25	217.50	1,020.00
M. F. Talty.....	5.45	817.50	9.98	299.40	1,116.90

Proposals for laying cement sidewalks, opened August 27, 1896.

Name of bidder.	Price per square yard.
F. M. Kemp & Sons <i>a</i>	\$1.22
Cranford Paving Co.....	1.27
Drew Concrete Paving Co.....	1.27

a Bid accepted.

Proposals for laying sheet asphalt and asphalt block pavements, opened August 20, 1896.

Name and address of bidder.	Laying standard asphalt pavement (per square yard).				Laying asphalt block pavement (per square yard).	
	On 6-inch hydraulic base, 2-inch binder, and 2-inch asphalt surface before compression.	On 8-inch hydraulic base, 2-inch binder, and 2-inch asphalt surface before compression.	On cobble, rubble, and Macadam base, etc., asphalt surface, 2 inches before compression.		On gravel base.	On 4-inch hydraulic base.
			Asphalt (per square yard).	Binder (per cubic yard).		
Barber Asphalt Paving Co., New York City.....	a \$1.63	a \$1.83	a \$1.10	\$6.90	.....	.....
Eastern Bermudez Asphalt Paving Co., New York City.....	1.75	1.95	a .53	a 12.50	.....	.....
Southern Asphalt Paving Co., Baltimore, Md.....	1.71	1.91	.83	10.95	.....	.....
Washington Asphalt Block and Tile Co., Washington, D. C.....	.....	.....	.....	.....	a \$1.77	a \$2.00

a Bid accepted.

Proposals for grading suburban streets, opened August 20, 1896.

Name and address of bidder.	Connecticut avenue extended.		Harvard street.	
	Price.	Time of completion.	Price.	Time of completion.
	Cents.	Days.	Cents.	Days.
G. B. Mullin, Washington, D. C.....	a 16	179	23½	120
Gaskins & Strang, Washington, D. C.....	17	120	23	120
Henry Voight, Washington, D. C.....	18	100	.....	.....
R. Seck, Washington, D. C.....	33½	120	.....	.....
Horn & Hussey, Washington, D. C.....	.....	.....	a 21½	90
Andrew Gleeson, Washington, D. C.....	16½	120	23	90

a Bid accepted.

Proposals for grading streets, opened July 20, 1896.

Name and address of bidder.	Illinois avenue.		Massachusetts avenue extended.		Yale, Bismark, Princeton, Harvard, and Columbia.	
	Price per cubic yard.	To be completed within—	Price per cubic yard.	To be completed within—	Price per cubic yard.	To be completed within—
	Cents.	Days.	Cents.	Days.	Cents.	Days.
Chas. H. Eslin, Washington, D. C.....	17	120	24	150	19	120
W. E. Chaffee, Washington, D. C.....	21	90	.....	.....	.....	.....
Albert Gleason & Co., Washington, D. C.....	.....	.....	29	150	a 15½	a 100
G. B. Mullin, Washington, D. C.....	.....	.....	16½	180	.....	.....
D. Gaskins, Washington, D. C.....	16	60	a 15	a 90	18	90
L. N. Simpson, Washington, D. C.....	14½	180	.....	.....	.....	.....
M. D. Knight, Washington, D. C.....	21½	90	24½	120	.....	.....
J. F. Kileen, Washington, D. C.....	25	90	22½	90	27	90
R. Seck, Washington, D. C.....	15½	100	.....	.....	.....	.....
Andrew Gleeson, Washington, D. C.....	18½	150	19	120	18	90
Horn & McCormick, Washington, D. C.....	19½	90	45	250	23½	180
Jas. Frawley, Washington, D. C.....	27	90	25	110	24	90
Jno. O'Day, Washington, D. C.....	a 14½	a 120	15½	180	.....	.....
Langhorne, Allen & Co., Washington, D. C.....	.....	.....	28	180	.....	.....
Lyons Bros., Washington, D. C.....	19	.....	35	.....	24½	.....

a Bid accepted.

290 OPERATIONS OF THE ENGINEER DEPARTMENT, D. C.

Proposals for grading certain streets, opened November 25, 1896.

Name and address of bidder.	Pierce and High streets, Anacostia 6,000 cubic yards.	Erie street, Meridian Hill (2,000 cubic yards).
	<i>Cents.</i> a 14	<i>Cents.</i>
G. B. Mullin, Washington, D. C.	14	a 19
Richd. Seek, Washington, D. C.	14	20
And. Gleeson, Washington, D. C.	17	27
H. L. Welles, Washington, D. C.	17	34
E. G. Gummel, Washington, D. C.		
Albert Gleason & Co., Washington, D. C.		

a Bid accepted.

Proposals for constructing the Fifteenth street and F street portions of the F street and Easbys Point intercepting sewer, opened August 1, 1896.

Name and address of bidder.	For excavation above sewer sub-grade, including excavation for manholes, etc. (25,000 cubic yards), per cubic yard.	For brick masonry laid in natural cement mortar, including plastering, etc. 1,644 cubic yards, per cubic yard.	For vitrified brick masonry in Portland cement mortar, including plastering forms, etc. (339 cubic yards), per cubic yard.	For concrete masonry in place, natural cement mortar, etc. 1,080 cubic yards, per cubic yard.	Total cost.
B. J. Coyle, Washington, D. C.	\$0.88	\$10.50	\$22.00	\$7.80	\$56,320.00
Lyons Bros., Washington, D. C.	.95	9.50	18.90	6.50	a 51,295.10
John Jacoby, Wilmington, Del.	1.50	10.00	20.00	8.00	70,260.00

a Bid accepted.

Proposals for grading, regulating, and macadamizing streets, opened August 25, 1896.

Name and address of bidder.	M street NE., between Second and Fourth streets.		Kentucky avenue, between Lincoln Square and B street.			
	Grading, per cubic yard.	Removing and hauling cobble, per square yard.	Grading, per cubic yard.	Setting curbs, per linear foot.	Paving cobble gutters and laying flag crossings, per square yard.	Gravel roadway, per square yard.
	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
M. F. Talty, Washington, D. C.	a 16	a 10	25	15	25	16
C. H. Eslin, Washington, D. C.	18	8	23	17	24	16
W. E. Chaffee, Washington, D. C.	37	12	23	16	36	23
Jas. Frawley, Washington, D. C.	22	9	a 16	a 15	a 17	a 15
And. Gleeson, Washington, D. C.	20	10	20	15	20	15
Washington Asphalt Block and Tile Company, Washington, D. C.	18	12	20	15	23	14
R. Seek, Washington, D. C.	17	10				
Gaskins & Strang, Washington, D. C.			21	22	23	21

a Bid accepted.

Proposals for grading, regulating, and macadamizing streets, etc.—Continued.

Name and address of bidder.	Thirteenth street SE., between East Capitol and D streets.				Florida avenue, between Ninth and M streets NE.			
	Grading, per cubic yard.	Setting curb, per linear foot.	Paving cobble gutters and laying flag crossings, per square yard.	Laying gravel roadway, per square yard.	Grading, per cubic yard.	Setting curb, per linear foot.	Paving cobble gutters and laying crossings, per square yard.	Laying macadam roadway, per square yard.
M. F. Talty, Washington, D. C.....	<i>Cents.</i> 25	<i>Cents.</i> 15	<i>Cents.</i> 25	<i>Cents.</i> 16	<i>Cents.</i> 20	<i>Cents.</i> 15	<i>Cents.</i> 25	<i>Cents.</i> 82
C. H. Eslin, Washington, D. C.....	33	17	24	16	20	17	25	79
W. E. Chaffee, Washington, D. C.....	32	16	36	24	23	17	36	81
Jas. Frawley, Washington, D. C.....	<i>a</i> 16½	<i>a</i> 15	<i>a</i> 17	<i>a</i> 12½	<i>a</i> 14	<i>a</i> 19	<i>a</i> 18	<i>a</i> 77½
And. Gleeson, Washington, D. C.....	32	14	20	13½	19	14	22	78
Washington Asphalt Block and Tile Company, Washington, D. C.....	20	15	23	14½	19	16	23	86
Geo. Killeen, Washington, D. C.....	.....	.....	.....	.....	20	18	25	75
Gaskins & Strang, Washington, D. C.....	25	22	23	21	.....	.....	.....	.....

a Bid accepted.

Proposals for improving L street between Fourth and Eighth streets SE., opened March 8, 1897.

Name and address of bidder.	Grading (per cubic yard).	Haul and set curb (per linear foot).	Lay cobble gutters (per square yard).	Lay Gravel roadway (per square yard).
Washington Asphalt Block and Tile Co., Washington, D. C. <i>a</i>	<i>Cents.</i> 20	<i>Cents.</i> 14	<i>Cents.</i> 16	<i>b</i> 10½
Jas. Frawley, Washington, D. C.....	15½	15	16	14
Jas. P. Edwards, Washington, D. C.....	25	17	19	14

a Bid accepted.

b Complete in thirty working days.

Proposals for grading North Capitol street, opened April 9, 1897.

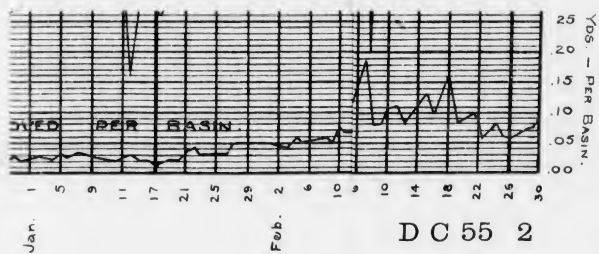
Name of bidder.	Price per cubic yard.	Time.
M. F. Talty.....	<i>Cents.</i> 17½	<i>Days.</i> 150
Green & Gaskins.....	23	90
James Frawley.....	32½	150
Geo. B. Mullin.....	19½	118
Dougherty & Smith.....	25	120
Andrew Gleeson.....	18	<i>a</i> 4

a Months.

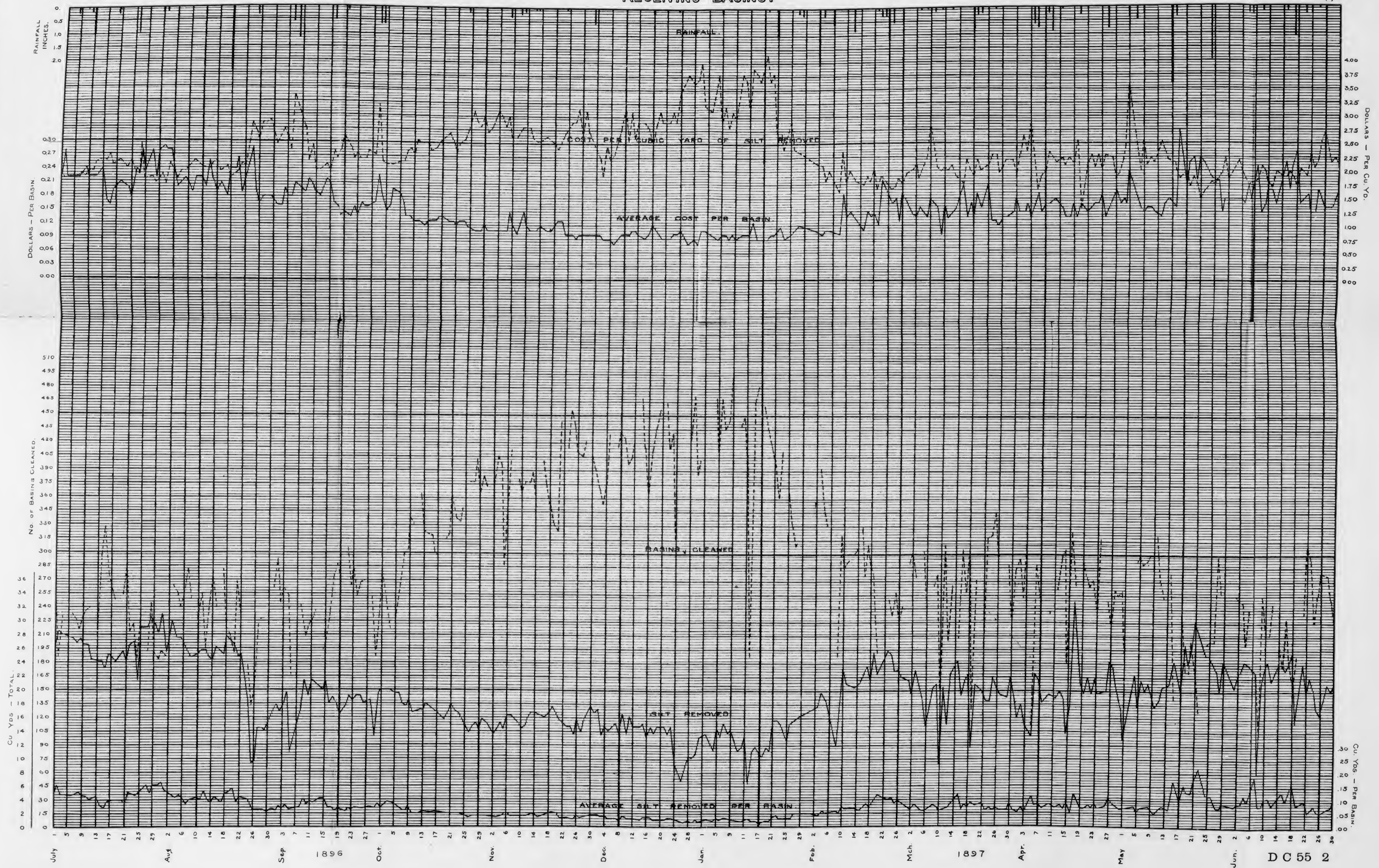
Schedule of bids for paving alley of square 457 with vitrified blocks on 6-inch base, opened June 25, 1897.

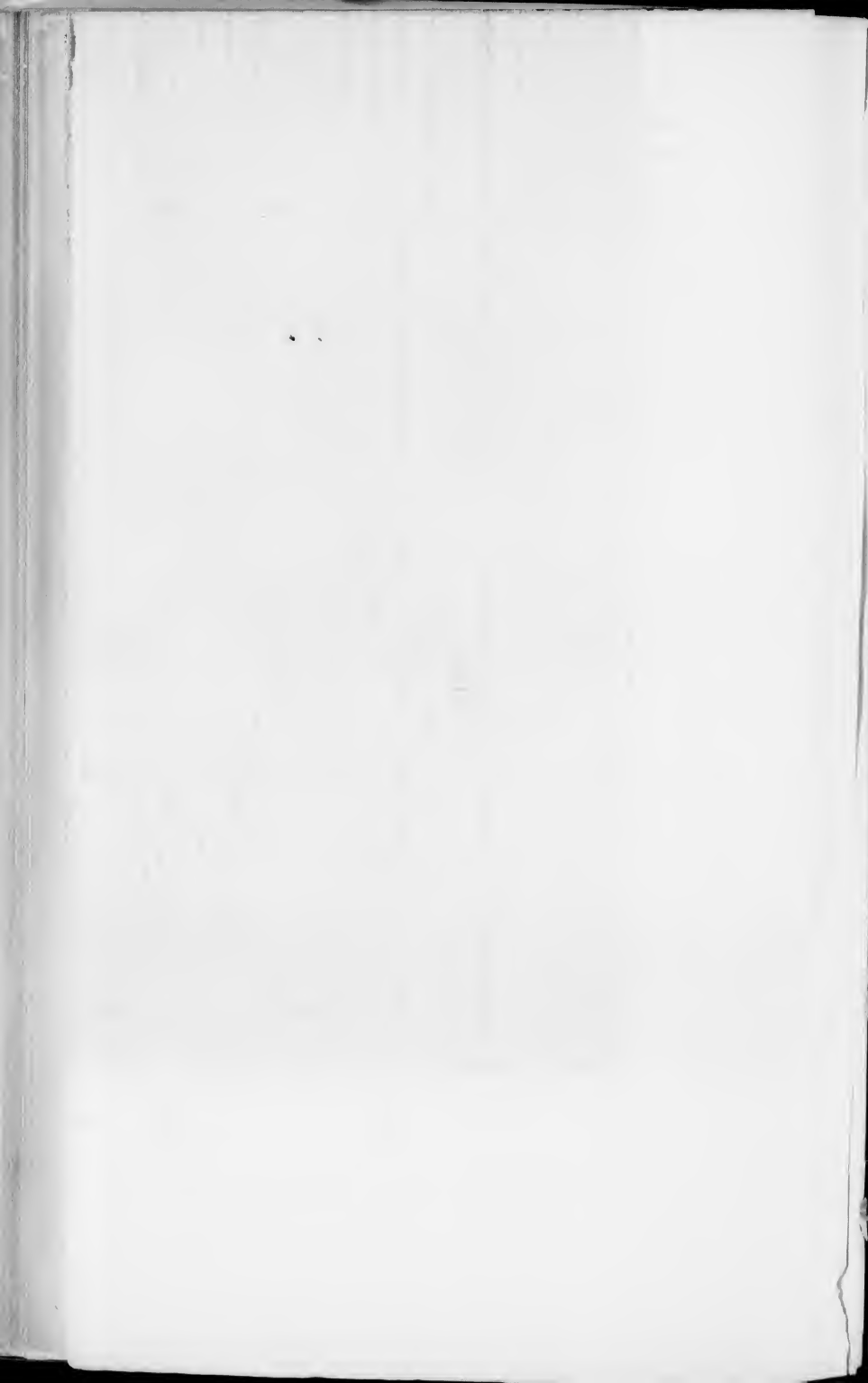
Name of bidder.	Price per square yard.
Richard Horn & Son.....	<i>Cents.</i> 62.5
The Washington Asphalt Block and Tile Co.....	67
The Cranford Paving Co.....	74.5
W. H. H. Allen.....	87





1896-97.
RECEIVING BASINS.





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